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MEDICAL BOTANY:

OR,

ILLUSTRATIONS AND DESCRIPTIONS

OF THE

MEDICINAL PLANTS

OF THE LONDON, EDINBURGH, AND DUBLIN PHARMACOPŒIAS;

INCLUDING

A POPULAR AND SCIENTIFIC DESCRIPTION OF

POISONOUS PLANTS.

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Zingiber officinale

W. Marshall del.

ZINGIBER OFFICINALE.

Narrow-leaved Ginger.

Class I. MONANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, *Lin. Brown.* CANNÆ, *Juss.*

GEN. CHAR. *Anther* 2-lobed. *Filament* elongated beyond the anther with an awl-shaped, channelled beak, embracing the style. Outer limb of the *corolla* ringent; inner a 3-lobed lip.

SPEC. CHAR. *Bracteas* ovate-lanceolate, acute. Segments of the outer limb of the corolla linear, revolute. Middle lobe of the lip entire. *Nectary* 3-lobed.

Syn.—Zingiber, *Browne's Jam.* 119; *Sloane's Jam.* 1. p. 163.

Zingiber majus, *Rumph. Amboin.* v. 5. 156. t. 66. f. 1.

Ischi, *Reede Hort. Malab.* v. 11. 21. t. 12.

Amomum Zingiber, *Lin. Sp. Pl.* 1; *Willd.* v. 1. 6; *Jacq. Hort. Vind.* v. 1.

31. t. 75; *Roscoe in Lin. Soc. Trans.* v. 8. p. 347.

FOREIGN.—Gingembre, Fr.; Scnzzero, It.; Ingwer, Ger.

THE Ginger plant is a native of the East Indies, and of various parts of Asia, but is now extensively cultivated in the warmer parts of America, and in the West India Islands, from whence it is chiefly imported into Europe. It is a stove plant in England, flowering in September, and is said to have been raised here by Edward Lord Zouch, before the year 1605.

The root is perennial, tuberous, fleshy, of a compressed roundish form, covered with an ash-coloured bark, and sending off many stout fibres. The whole herb is smooth, and partakes of the hot, gratefully aromatic flavour of the root. The *barren* stems are several, upright, annual, herbaceous, wand-like, round, leafy, and about three feet high. The leaves are alternate, linear-lanceolate, acute, entire, single-ribbed, spreading, with long, close, sheathing, abrupt foot-stalks. The *flower-stalks* are radical, a foot high, and clothed with tubular sheathing bracteas. The

spikes are solitary, erect, club-shaped, enveloped in broader, shorter, less pointed, crowded bractes, each accompanied by a solitary, sessile flower, twice its own length, of a delicate texture, and short duration. The corolla is monopetalous, tubular, and cut into three unequal acute segments: the outer limb of a very pale yellow, or straw-colour, revolute; the upper segment rather the broadest, having the lip spotted with crimson. There is only one filament, which is extended beyond the anther; and has an awl-shaped, channelled beak, embracing the style. The germen is inferior, roundish; style thread-shaped, embraced by the filament, and scarcely extending beyond its beak: stigma small, projecting a little beyond the beak. The capsule is smooth, containing many seeds. *Fig. (a)* represents the outer bractea; *(b)* the inner bractea and flower; *(c)* the anther and style; *(d)* the lip.

The Greek name for ginger, *Σιγγιβερ*, is evidently derived from *Zungebeel*, its Persian appellation; and as it is indigenous at *Gingi* in China, it is supposed to have obtained its English name from that place.

It is a native of many eastern countries, but is nowhere to be found, says Ainslie, of a finer quality than on the coast of Malabar. It is the *ischi* of the HORT. MALAB. (11. p. 21. t. 12.), and the *zingiber majus* of Rumphius (Herbarium Amboinense, pars 5. p. 156. t. 66. f. 1.)

This plant was introduced into New Spain, by Francisco de Mendoza; from whence it was carried to the West India Islands, where it grows so plentifully, particularly in Jamaica, even in a wild state, as to induce a belief that it was indigenous to the soil. Since its introduction into Jamaica, it has become an article of considerable export; for which purpose it is generally cultivated. It is calculated that about one million pounds of it are annually consumed in Europe.

Ginger was known in England in Queen Elizabeth's reign, as Gerard says, "Our men which sacked Domingo in the Indies digged vp ginger there in sundry places wilde." He adds, "Ginger groweth in Spaine, in the Canarie Islands, and the Azores. It is most impatient of these our northern regions, as

myself have found by proofs ; for that there haue been brought vnto me at seuerall times, sundry plants thereof, fresh, greene, and full of iuice, as well as from the West Indies, as from Barbarie, and other places ; which haue sprouted and budded foorth greene leaues in my garden in the heate of somer ; but as soon as it hath bin but touched with the first sharp blast of winter, it hath presently perished, both bladè and roote.”

It appears to have been known in London about the year 1566-7, and was evidently introduced by the Dutch ; as Gerarde states that about thirty years or more, before he published his account, (1597,) “ an honest and expert apothecarie William Dries, to satisfie my desire, sent me from Antwerpe to London, the picture of ginger, because I was not ignorant that there had been oft ginger rootes brought green, new, and full of iuice, from the Indies to Antwerpe : and further, that the same had budded and grown in the said Dries’ garden.”

When the stalks are wholly withered, the roots are fit to take up, which is generally in January or February. Being picked and cleaned, they are gradually scalded in boiling water : after this they are spread, and exposed to the sun, till the whole is sufficiently cured ; they are then divided into parcels of about one hundred weight each, and put into bags for the market : this is called *black ginger*. The *white* is never scalded, but every root is picked, washed, and scraped separately, and then dried in the sun and air.

To preserve this root in syrup, it is dug when the shoots do not exceed five or six inches in height. Being picked and washed, they are scalded till tender : then put into cold water, and scraped and peeled gradually : this operation may last three or four days, during which time the roots are kept in water, constantly renewed. They are then put into jars, and covered with a thin syrup, which after two or three days is shifted, and a richer put on : this is sometimes again removed, and even a fourth put on ; but it seldom requires more than three syrups. The shifted syrups are diluted, and fomented into a pleasant liquor, called cool drink.

Ginger should be chosen in large roots, new, not easily broken, of a light brownish green colour, and of a hot, pungent, aromatic

taste. That which is small, dark coloured, soft, or very fibrous, should be rejected. It is sometimes imported *green* from the East Indies. In freight, 16 cwt. of dry, and 20 cwt. of green ginger, are allowed to a ton.

QUALITIES.—The active matter of this root is yielded to alcohol, and in a great measure to water. It affords, by distillation, a small quantity of essential oil, upon which the flavour of ginger depends; while its pungency appears to reside in a resino-extractive matter, united with a great quantity of starch, which constitutes the chief bulk of this valuable condiment.

MEDICAL PROPERTIES AND USES.—This root, which is stimulant and carminative, is principally employed as an adjunct to other remedies; to augment their efficacy, or to obviate their griping effects: and is often administered, in substance or in infusion, for flatulent colic, tympanities, and some forms of dyspepsia. It also acts as a sialogue, when chewed: toothache is therefore sometimes relieved by it, and by some it is recommended in relaxations of the uvula, and tonsils, and in paralysis of the muscles of the tongue and fauces.

We are informed by Dr. Ainslie, that Europeans in India, of delicate constitutions, frequently use an infusion of ginger in place of common tea, and the natives eat it freely in salads.

DOSE.—From ten grains, to a scruple, in powder.

OFF. PREP.—*Acidum Sulphuricum aromaticum.* E.

Confectio Opii. L.
——— *Scammonii.* L. D.
Infusum Sennæ. L.
Pilula Aloes. D.
Pilula Scillæ comp. L.
Pulvis Cinnamomi comp. L. E. D.
——— *Scammonii comp.* L. D.
——— *Sennæ comp.* L.
Spiritus Ætheris aromaticus. L.
Syrupus Rhammi. L.
——— *Zingiberis.* L. E. D.
Tinctura Cinnamomi comp. L.
——— *Rhei comp.* L.
——— *Zingiberis.* L. D.
Vinum Aloes. L. E. D.



Anthemis Pyrethrum

ANTHEMIS PYRETHRUM.

Spanish Chamomile, or Pellitory of Spain.

SPEC. CHAR. *Stems* simple, 1-flowered, decumbent ;
leaves bipinnated, segments linear, pointed.

Syn.—*Pyrethrum officinarum*, Ger. Em. 758. 1 ; Park. 858. n. 2. 859. f. 2.

Pyrethrum flore bellidis, Bauh. Pin. 148 ; Raii Hist. 353.

Chamæmelum specioso flore, radice longa fervida, Shaw. Afric. 138.

Anthemis Pyrethrum, Lin. Sp. Pl. 1262 ; Willd. v. 3. 2174 ; Woodv. v. 2, t. 104 ; Curt. Bot. Mag. v. 13. t. 462.

FOREIGN.—*Pyrèthre*, Fr. ; *Piretro*, It. ; *Anthemis pelitri*, Sp. ; *Bertram Wurtzel*
Zahn Wurtzel, Ger. ; *Akkaracarum*, Tam. ; *Akurkurha*, Arab.

PELLITORY of Spain is a perennial plant, a native of the Levant, Syria, Arabia, Barbary, and the south of Europe. It has long been celebrated as a medicinal agent ; and merits a place in our collections, on account of the beauty both of the foliage and flowers : it is a very rare plant in this country, notwithstanding it was cultivated here, by Lobel, as long since as 1570. Parkinson, it appears, grew it ; as he observes, that the roots of the cultivated plants were much larger than those of the wild one : he tells us also, that it was too tender to endure our winters ; and to the latter cause, as well as to the difficulty of propagating it, for it does not ripen its seeds in this country, its present scarcity has been attributed.

The root is long, tapering, about the thickness of a finger, which runs down a foot or more into the ground, with a brownish cuticle, and sending off several small fibres. From the root proceed several procumbent stems, about a foot in height, round, hairy, commonly unifloral, and seldom branching. The leaves are doubly pinnate, with narrow linear segments, of a pale green colour. The flowers appear in June and July ; they are large, terminal, solitary, with the florets of the disc yellow, and those of the radius white on the upper side, and of a purplish colour

underneath. The florets resemble those of *Anthemis nobilis*; in the centre, or disc, are hermaphrodite, those of the circumference, margin or radius, are female, that is, have no stamens, nor male organs. Fig (*a*) and (*b*) represents a front and back view of a floret of the radius; (*c*) a floret of the disc; (*d*) the style; (*e*) the stamens.

QUALITIES.—The dried root has no smell. On being chewed, the taste, which is acid, is not immediately perceived, but it quickly raises a glowing heat, and a plentiful secretion of saliva. “The heat produced by *Pyrethrum* is joined with a kind of vibration, as when a flame is brandished with a lamp furnace . . . Being chewed, it makes a sensible impression on the lips, which continues (like the flame of a coal betwixt in and out) for nine or ten minutes; but the heat in other parts much longer.* This heat is by no means so painful as that which the arum, capsicum, and some other plants produce. Alibert says, “Par la distillation, cette racine fournit une huile butyracée très acrimonieuse;” and it is on this oil, which is deposited in vesicles on the bark, that its pungency depends. It is completely extracted by alcohol and sulphuric ether.

MEDICAL PROPERTIES AND USES.—This root is a powerful stimulant; and if applied in its recent state to the skin, it produces inflammation and vesication, like *Mezereon*.† Dioscorides commended it for tooth-ache, for which it is still beneficially employed by us; and by him and the Arabian physicians it was prescribed for rigors.

The Persians and Moguls consider it to be discutient and attenuant; and the Vytians prescribe an infusion of it, in conjunction with other medicines, as a cordial and stimulant in lethargic cases, in palsy, and in certain stages of typhus fever. In consequence of the immense flow of saliva that it is capable of producing, “inflammations and congestions of the neighbouring parts are relieved. Hence it has been found useful, when chewed, in some kind of head-ache, apoplexy, chronic ophthalmia, and rheumatic affection of the face, and, by its direct stimulus, in paralysis of the tongue and muscles of the throat.”

* Grew, of tastes.

† Bergius.



Pastinaca (Parsnip)

PASTINACA OPOPONAX.

Opoponax, or *Rough Parsnip*.

Class V. PENTANDRIA.—*Order II.* DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.*

GEN. CHAR. *Fruit* elliptical, compressed, nearly flat, with 3 dorsal ribs, and 2 marginal ones. *Petals* entire, involute, equal. *Calyx* very minute, obsolete. *Flowers* regular, uniform, fertile.

SPEC. CHAR. *Leaves* bipinnate; leaflets unequal at the base; scabrous on both sides.

Syn.—*Panax Costinum*, vel *P. pastinacæ folio*, *Bauh. Pin.* 156.

Panax Heracleum majus, *Ger. Em.* 1003.

Panax Heracleum, *Moris*, v. 3. 315. *sect.* 9. *t.* 17. *f.* 1.

Panax Chironium, *Dalech. Hist.* 741.

Panax peregrinum, *Dod. Pempt.* 309.

Costus, *Matth. Valgr.* v. 1. 48.

Pseudocostus, *Camer. Epit.* 28; *Dalech. Hist.* 758.

Sphondylion, vel potius *Pastinacæ Germanicæ affinis Panax*, sive *Pseudo-*

Costus flore luteo, *Bauh. Hist.* v. 3. p. 2. 156.

Pastinaca Opoponax, *Lin. Sp. Pl.* 376; *Willd. x.* 1. 1466; *Woodv. t.* 113;

Fl. Græc. Sibth. v. 3. *t.* 288.

Πολύκαρπον, ἡ ἀμπέλωνα, hodié.

THIS is a hardy, umbelliferous exotic, a native of the Levant, Turkey, Arabia, Sicily, and the south of Europe; which has long held a distinguished place in the *Materia Medica*, as affording the gum-resin, called *Opoponax*. The plant withstands our winters, in the southern counties well; flowering in June and July; but it is only in the warmer regions of the east that the juice concretes into the appearance which it presents to us, when imported from Turkey and India. It grows abundantly in

Achaia, Bœotia, and Phocis in Macedonia; hence it is figured in Sibthorp's *Flora Græca*, v. 3. t. 285.

The root is perennial, branched, as thick as the human arm, fleshy, tapering, of a yellowish colour, tubercled, and covered with a corky bark. The stem rises six or seven feet in height, the thickness of a man's finger, round, leafy, striated, and scariose at the base, with numerous angular, smooth, shining, hairy branches, towards the summit. The leaves are very large, petioled, veiny, rough on both sides, with the petioles sheathing, more or less hairy, and acutely serrated; those of the root simple, cordate, and crenated: the stem-leaves are pinnate, composed of many pairs of oblong, serrated, veined leaflets, with the terminal leaflet cordate, and very large. Both the involucre and involucels consist of from four to six very small linear leaflets, which are sometimes altogether wanting. The flowers are numerous, small, of a greenish-yellow colour, and produced in erect, terminal flat umbels; on very smooth stalks, and are composed of several rays, with opposite linear, oblong, sub-entire, smooth bracteas, under each general umbel. The flowers are all uniform, and generally prolific; calyx very minute; petals five, involute, entire, equal; stamens thread-shaped, spreading, with roundish anthers; germen roundish; style short, erect; fruit elliptical, roundish, compressed, striated, almost flat, with three dorsal ribs, and a thin smooth border; seeds of the same form. Fig. (a) represents a flower magnified.

QUALITIES AND CHEMICAL PROPERTIES.—Opoponax, which is obtained by wounding the roots of the plant, is of a tolerably firm texture, usually in small grains, but sometimes in large masses, formed by a number of grains, connected with a matter of the same kind. The masses are generally loaded with foreign substances, and are much inferior to the pure loose drops. The finest is in grain from the size of a pin's head, to that of a large pea. The internal colour of these grains is a pale yellow, frequently mixed with white, and externally they incline to a red, or orange colour. They are moderately heavy, of a somewhat fat or unctuous appearance, smooth on the surface, of an acrid bitter taste, and a strong disagreeable smell. Opoponax

should be chosen in clear pieces, with the before-mentioned qualities. Such tears as are black, and too hard, should be rejected. The masses, or cakes, are usually of the black colour, and full of sticks and straws. Freight, 16 cwt. to a ton. With water it forms a milky solution, and about one-half of it dissolves. Alcohol acts but feebly. When dissolved with water or alcohol, these liquids acquire its flavour, but no oil separates.* Its specific gravity is 1·622.†

When distilled, it yields a brown oil, and acetic acid, in which a bituminous oil swims: the residual charcoal weighs $\frac{28}{100}$ of the Opoponax distilled. When incinerated, it left $\frac{37}{280}$ of its weight of ashes, composed of

Carbonate of lime	.	.	.	.	.	18
Silica	.	.	.	.	.	2
Carbonate	} of potash	.	.	.	.	15
Sulphate						
Muriate						
						<hr/>
						35

According to the analysis of Pelletier, to whom we are indebted for the preceding distillation, Opoponax is composed of the following constituents:—

Resin	. . . . .	42·0
Gum	. . . . .	33·4
Wood	. . . . .	9·8
Starch	. . . . .	4·2
Malic acid	. . . . .	2·8
Extractive	. . . . .	1·6
Caoutchouc	. . . . .	Trace
Wax	. . . . .	0·3
Volatile oil, and loss	. . . . .	5·9
		—
		100·0†

MEDICAL PROPERTIES.—This plant, which, according to Dierbach, is the *Πηρακλειον* of Hippocrates, was held in high

* Neumann's Chem. p. 316.

† Ann. de Chim. lxi. 90.

† Brisson.

repute by the ancients, especially by Celsus, who administered it in affections of the spleen and in struma;* but although, according to Virey,† it is considered by the continental physicians as “ bon discussif, resolutif, chasse les vents, atténue dans l’asthme et les obstructions,” it is scarcely ever used in England. It has, however, been regarded as antispasmodic and emmenagogue, and has been given for hysteria and chlorosis, in doses of from five grains, to half a drachm, but might, we consider, be expunged from our materia medica, as an article of little medical value.

* Lib. v. cap. xviii.

† Hist. Nat. des Med. p. 220.

*** The Editors deem it necessary to state, that they did not see the Plate of *Pastinaca Opoponax*, till it was too late to correct the lettering.



Rosa sulcata?

XCIX.

ROSA GALLICA; *a*, subvar. *Cuprea*.

Red Official Rose; *a*, subvar. "*Tuscany Rose*."

Class XII. ICOSANDRIA.—Order V. POLOGYNIA.

Nat. Ord. SENTICOSÆ, *Lin.* ROSACEÆ, *Juss.*

GEN. CHAR. *Calyx* pitcher-shaped, 5-cleft, finally pulpy, contracted at the neck. *Seeds* numerous, hispid, affixed to the inner side of the tube of the calyx.

SPEC. CHAR. *Leaflets* rigid, elliptical, smooth. *Prickles* of the stem uniform, slender; *flower-stalks* stiff, erect. *Calyx* ovate. *Fruit* subglobose.

Syn.—*Rosa rubra*, &c. *Bauh. Hist.* 2. 34.

R. centifolia, *Mill. Dict. n.* 14; *Willd. Sp. Pl.* 2. 1171; *Pers. Syn.* 2. 48.

R. sylvatica, *Gater. Montaub.* 94.

R. rubra, *Lamarck Fl. Fr.* 3. 130.

R. holosericea, *Röss Ros. t.* 16.—*Damascena rubro purpurea*, *ibid. t.* 18.

R. belgica, *Brot. Luist.* 1. 338.

R. cuprea, *Jacq. Fragm.* 31. *t.* 34. *f.* 4.

R. pumila, *Bauh. Hist.* 2. 35; *Willd. Sp.* 2. 1072.

R. austriaca, *Crantz Austr.* 86; *Poll. Palat.* 50.

Rosa, *n.* 1104. *Hall. Helv.*

R. gallica, *Lin.!* *Sp.* 704; *Willd. Sp.* 2. 1071; *Redouté les Roses*, *tom.* 1.

73. *t.* 25.—135. *t.* 52.—2. 17. *t.* 7.—19. *t.* 8. 10. *Bot. Reg. v.* 6. *t.* 448.

FOREIGN.—*Fleurs des Roses rouges*, *Fr.*; *Rosa domestica*, *It.*; *Essig-rosen*, *Ger.*

THIS species of Rose is a native of the south of Europe, common in our gardens, and flowering in June and July. In its cultivated state, it is scarcely three feet high, sending up, from its creeping roots, many stems, armed with fine, dispersed, short, straight prickles. The leaves consist of two or three pair of leaflets, with a terminal one attached on very short petioles to

a common footstalk ; the leaflets are ovate, rigid, doubly serrated, smooth, of a fine rather shining green colour on the upper surface, pale, downy, or hairy underneath. The stipulas are linear-lanceolate, pointed, entire, downy and glandular. The flowers consist of a few large spreading petals, of a deep peculiar rich crimson colour; their base, like the stamens, of a fine gold colour, and stand on stiff, erect peduncles. The segments of the calyx are downy, sometimes fringed at the margin with a row of linear-lanceolate leaflets, as if pinnate: the stamens are numerous, bearing roundish yellow anthers; the germens are also numerous, with villose styles, united into a cylinder. The fruit is subglobose, and of a pale crimson colour.

In a work, professedly scientific, a long dissertation on this flower of Love and Poetry cannot reasonably be expected. We must not, however, pass over unnoticed some of the fables and allegories with which it is connected, lest some of the ladies who patronize our undertaking should consider us as devoid of proper taste.

The name *Rosa* is supposed to be derived from the Celtic, *rôs*, or *rhos*; from whence proceeds its Greek synonym, *ῥόδον*. De Theis considers that the Celtic *rhodd*, or *rhudd*, red, is the primary root of these words, the rose colour being almost synonymous with redness. Hence also came *rhus*, *rubia*, *rubus*, and the Greek name of the *pomegranate*, *ῥοα*, or *ῥοδία*, still in use. From the beauty of the genus, the rose is dedicated to Venus, the goddess of love and beauty. Thus Berkely, in his *Utopia*, describes lovers as declaring their passion by prescribing to the fair beloved a rose-bud, just beginning to open; if the lady accepted and wore the bud, she was supposed to favour his pretensions. As time increased the lady's affection, he followed up the first present by that of a half-blown rose, which was again succeeded by one full-blown; and if the lady wore this last, she was considered as engaged for life. In some parts of Sussex, it is customary for the domestics to welcome a bride, by strewing the path with roses, on her first appearance; and in Surrey, in the time of Evelyn, it was the custom to plant roses round the graves of lovers. The Greeks and Romans observed this practice

so religiously, that it is often found annexed as a codicil to their wills, as appears by an old inscription at Ravenna, and another at Milan, by which roses are ordered to be yearly strewed, and planted upon graves. In South Wales it is also the universal practice to strew roses and other flowers over the graves of departed friends. As an emblem of youth, the rose was dedicated to Aurora, and as an emblem of fugacity, to Cupid; no doubt from its short-lived beauty, which has been a fruitful theme for poets, as in Crashaw's lines on the death of Mr. Herrys: an instance also occurs in Mr. Bowring's translation from the Russian of Kostrov; and in Canto 16, of Tasso's *Gerusalemma Liberata*.

The rose was given by Cupid, as a bribe to Harpocrates, the god of Silence; from whence, we should suppose, originated the custom, which, according to Rosenbergius, prevailed among the northern nations of Europe, of suspending a rose from the ceiling over the upper end of their tables, when it was intended that the conversation which took place should be sacred to secrecy: and it is this custom that undoubtedly gave rise to the common expression, "Under the Rose."

The ancients tell us, that roses were originally white; but were changed to red by the blood of Venus, when her feet were lacerated by their prickles in her attempt to protect Adonis from the rage of Mars. Theocritus and Bion, however, are of opinion that it was the blood of Adonis himself that changed their colour. Another fable relates, that Cupid, leading a dance in Heaven, stumbled and overset a bowl of nectar, which falling upon the earth, stained the rose; while Ausonius has caused the rose to blush, from the blood of Cupid. Busbequius informs us that the Turks superstitiously believe that roses originate from the sweat of their prophet Mahomet. Monkish writers also have enlisted roses into the service of their theology. Marubus tells a story of a virgin named Dorothea, who suffered martyrdom in Cæsarea under the government of Fabricius; and who converted a scribe named Theophilus to Christianity, by sending him some roses in the winter-time out of Paradise.

A golden rose was considered so honourable a present, that

Smith, has twenty-two species : Denmark has seven ; Holland, thirteen ; whilst in Spain, Portugal, and the Levant, only four species have been observed. In the north of Africa are two species peculiar to that country, and two others common to it, and Europe. Fourteen species have been found in North America, only two of which, *R. Montezuma* and *stricta* bear much general resemblance to European roses. The *R. lævigata* of the woods of Georgia is so similar to the *R. sinica* of China, as not to be immediately distinguished from it ; and the latter is even sold in some of the London nurseries under the name of *R. Cherokeeensis*.

QUALITIES.—The petals of the unblown buds are the parts medicinally used. They give out their virtues both to water and rectified spirit, and tinge the former of a fine red colour, but the latter of a very pale one. The extract obtained by inspissating the watery infusion, is moderately austere, bitterish, and subsaline. The spirituous extract is considerably stronger both in astringency and bitterness. Water at 212° extracts both its odour and taste ; and the infusion strikes a black with sulphate of iron, and also forms a precipitate of a dark colour, with sulphate of zinc.

MEDICAL PROPERTIES.—It is generally believed that the petals of this rose are astringent ; but Poterius, as cited by Lewis, states that he found a drachm of powdered red roses occasion three or four alvine evacuations, and this not in a few, but several instances. Ainslie also says, “the powder of the red rose petals, in doses of one drachm, is purgative.” Whether, however, they are purgative, or not, is of very little importance, since they are principally used as an elegant colouring matter in the infusion, which owing to the addition of sulphuric acid, is certainly astringent. This infusion forms an elegant and useful vehicle for neutral salts in hæmorrhages, and other diseases.

OFF. PREP.—Confectio Rosæ. *L. E. D.*
Infusum Rosæ. *L. E. D.*
Mel Rosæ. *L. D.*
Syrupus Rosæ. *E.*

ROSA CENTIFOLIA.—*Hundred-leaved Rose.*

SPEC. CHAR. *Prickles* unequal, large, falcated. *Leaflets* edged with minute glands. *Flowers* drooping. *Calyx* viscid. *Fruit* oblong.

Syn.—*Rosa hollandica*, sive *batava*, *Ger. Em.* 1262

Rosa provincialis *Mill. Dict. n.* 18; *Willd. Sp.* 2. 1070.

Rosa centifolia, *Lin. Sp. Pl.* 704; *Redouté Ros.* 1. 25. *t.* 1—37. *t.* 7—77. *t.* 26—79. *t.* 27—111. *t.* 40.

FOREIGN.—*Rose a cent feuilles*, Fr.; *Die Centrifolienrose*, Ger.; *Hoa hounng tau*, Cochinch.

THIS, like the *Rosa gallica*, is generally regarded as a native of the south of Europe; but Mr. Lindley is disposed to place its native country in Asia, because it has been found wild by Bieberstein, with double flowers, on the eastern side of Mount Caucasus, whither it is not likely to have escaped from a garden. It is a much taller plant than the *Rosa gallica*, rising to the height of five or six feet, and beset with large, unequal, hooked prickles. The leaves resemble those of *gallica*, but are larger, and furnished on the margin with minute glands. From *gallica* it differs also by its flowers being cernuous, by the larger size of its prickles, and by its oblong or rounded, but never elongated fruit.

QUALITIES.—Many varieties of this species of rose are indiscriminately used for medicinal purposes. The petals are of a pale red colour, and of a very fragrant odour; and although this fragrance is very pleasant to most persons, several instances are on record, where it was highly injurious. Both Echius and Schwenckius narrate cases of inflammation of the eyes, faintings, hysterical affections, abortion, &c. being produced; and Murray states, that persons confined in a close room, with a large quantity of roses, have been in danger of immediate extinction of life. From the experiments of Priestly and Ingenhousz, their effects are attributed to the mephitic air, (carbonic acid gas,) which these, in common with many other flowers, exhale. The petals impart their odour to watery liquids, both by infusion and dis-

tillation. Six pounds of fresh roots impregnate, by distillation, a gallon or more of water strongly with their flavour. On distilling large quantities of roses, a fragrant, butyraceous oil is obtained, which liquifies by heat, and appears yellow ; but concretes in the cold into a white mass. The smell of this exactly resembles that of roses, and is well known as a perfume under the name of *Attar*, or *Uttir*.

This valuable perfume is prepared in India, Persia, and Turkey, and is frequently adulterated with the oil of the sandal wood ; the imposition, however, cannot be concealed, since the essential oil of sandal will not congeal in common cold ; and its smell cannot be concealed, but will predominate in spite of every art. In Cashmere they seldom use sandal to adulterate the attar ; but Col. Polier states, that in order to increase the quantity, they are said to distil with the roses a sweet-scented grass, which does not communicate any unpleasant scent, and gives the attar a deep clear colour. This essence also does not congeal in a slight cold. The attar, or essential oil of roses, is also frequently adulterated with spermaceti, more particularly that imported from Turkey. The best mode of discovering this fraud, according to Mr. Milburn, is by the addition of a small portion of alcohol to the suspected oil ; this will dissolve the genuine oil, and leave the spermaceti in lumps, which if heated will form one solid white mass. In the genuine oil, when congealed, the chrystals will be short and uniform, not more numerous in one part than in another ; for if they are of different lengths, the oil may be considered as adulterated. It is said that the colour of the attar is no criterion of its goodness, it being sometimes of a fine emerald green, of a bright yellow, and of a reddish hue, from the same country, and from the same process, only from roses obtained on different days. The real oil or attar concretes with a slight cold ; it floats on cold water, and dissolves slowly in highly rectified spirits of wine. It is seldom imported from India for sale ; but considerable quantities are brought from Turkey. In speaking of the rose, Dr. Ainslie, in his valuable "*Materia Indica*," informs us that the attar of the Levant and Tunis is obtained from the *Rosa sempervirens*.

With the greatest caution, and all the auxiliary aid of science, very little *attar* can be obtained from English roses ; and even in Italy they yield a very minute portion. Kempfer, in his *Aménités Exotiques*, p. 374, speaks highly of the roses of Shiraz, where it would appear that a large quantity of this essential oil is prepared ; nor are the roses and *attar* of Cashmere held in less estimation in the East. The roses of Barbary and Syria are inferior in quality to the Persian ; and at Bassora, in the latter country, whole fields are cultivated for the purpose of making rose water. In the Asiatic Researches, Colonel Polier gives the following process for making *attar*, or essential oil of Roses ;—“ Forty pounds of roses, with their calyces, are put into a still with 60 lbs. of water. The mass being well mixed, a gentle fire is put under the still ; and when the fumes begin to rise, the cap and pipe are properly fixed and luted. When the impregnated water begins to come over, the fire is lessened by gentle degrees, and the distillation continued until thirty pounds of water are come over, which is generally done in about four or five hours. The water is to be poured upon 40lb. of fresh roses, and thence are to be drawn from 15 to 20lb. of distilled water, by the same process as before. It is then poured into pans of earthenware, or of tinned metal, and left exposed to the fresh air for the night. The *attar*, or essence, will be found in the morning congealed and swimming on the top of the water. This is to be carefully separated and collected, either with a thin shell or a skimmer, and poured into a phial. When a certain quantity has been obtained, the water and feces must be separated from the clear essence, which, with respect to the first, will not be difficult to do, as the essence congeals with a slight cold, and the water may then be made to run off. If, after that, the essence is kept fluid by heat, the feces will subside, and may be separated ; but if the operation has been neatly performed, these will be little or none. The feces are as highly perfumed as the essence, and must be kept after as much of the essence has been skimmed from the rose-water as could be. The remaining water should be used for fresh distillations, instead of common water, at least as far as it will go.”

The quantity of essential oil to be obtained from the roses is very variable, as it depends not only on the skill of the distiller, but also on the quality of the flowers and the favourableness of the season. In order to obtain four *mashas* (about $1\frac{1}{2}$ drachm) from 80 pounds, which, deducting the calyces, amounts to something less than 3 drachms *per* 100 pounds of rose leaves, the season must be very favourable, and the operation carefully performed.

Rose Water (*Aqua Rosæ* Ph. Lond.) is prepared by taking *eight* pounds of the petals of *Rosa centifolia*, and pouring over them as much water as will prevent empyreuma during the distillation, and then distilling a gallon. This water has the agreeable odour of the rose in great perfection when properly prepared; but is very apt to spoil, unless it be rectified by a second distillation.

MEDICAL PROPERTIES.—The petals of the hundred-leaved rose are considered to be slightly laxative; and the syrup is often mixed with a little almond oil, and given to children as a domestic medicine. Rose water is an elegant medium for preparations of lead and zinc, of which collyria are generally composed.

OFF. PREP.—*Aqua Rosæ.* L. E. D.

Syrupus Rosæ. L. E.



Rosa canina.

ROSA CANINA.

Common Dog Rose.

SPEC. CHAR. *Fruit* ovate, smooth or somewhat bristly.
Calyx pinnate, deciduous. *Prickles* strongly hooked.
Styles distinct. *Leaflets* rigid, ovate, pointed, quite smooth.

Syn.—*Rosa sylvestris inodora*, seu *canina*, *Raii Syn.* 474 ; *Park.* 1017.

R. canina inodora, *Ger. Em.* 1270. *f.*

R. sylvestris vulgaris, flore odorato incarnato, *Bauh. Pin.* 483.

R. sylvestris alba cum rubore, folio glabro, *Bauh. Hist.* v. 2. 43. *f.*

R. n. 1101, *Hall. Hist.* v. 2. 38.

R. canina, *Lin. Sp. Pl.* 704 ; *Willd.* v. 2. 1077 ; *Fl. Brit.* 540 ; *Engl. Bot.* v. 14. t. 992 ; *Lind. Ros.* p. 98 ; *Hook. Scot.* 157 ; *Woods Trans. of Lin. Soc.* v. 12. 223. *Woodv.* v. 3. t. 139.

PROVINCIALY.—*Wild Briar*, *Dog Rose*, *Hep-tree*.

FOREIGN.—*Le Rosier sauvage* ; *Rose de Chien*, Fr. ; *Rosa salvatica*, It. ; *Rosa silvestre* ; *R. peruna*, Sp. ; *Rosa brava*, Port. ; *Hundrose*, Ger. ; *Niupon*, Swed. ; *Schiopwnik*, Rus.

THE Dog Rose, the most common ornament of our hedge-rows, and universally admired for the beauty of its foliage, its large, handsome, fragrant flowers, and its rich coral fruit, is sufficiently familiar to every one. It is not, however, generally known that this species is very apt to be confounded with some others, equally common, which it nearly resembles ; we shall therefore make no apology for quoting Mr. Lindley's description :—" A straggling briar six or seven feet high. The branches light green, reddish-brown on the sunny side ; armed with strong, scattered, hooked, nearly equal prickles (rarely straight, and then much closer together.) Leaves distant, pale or dark green, frequently tinged with red, in exposed situations usually much blistered by the sun, quite free from pubescence ; stipulas rather dilated, a little reflexed, acute-pointed ; petiole armed with a few little, hooked prickles ; leaflets 5—7, ovate or oblong, acute or rounded, sessile or subsessile, flat or concave, even or rugose, coarsely or

finely, simply or doubly serrated; the serratures always acute, without glands and converging. Cymes one or many-flowered; bractæ ovate-lanceolate, appressed, acute, concave or flattish, finely toothed and glandular at the edge; peduncles and calyx smooth; tube ovate; sepales spreading, sharp-pointed, deciduous, somewhat divided; petals obcordate, concave; disk very thick, elevated; ovaries 20—30; styles nearly smooth, distinct, included or a little exserted. Fruit ovate or oblong, scarlet, shining, without any bloom; pericarps large, uneven." It flowers in June and July, ripening its fruit late in autumn. Fig. (a) represents the fruit cut open to show the seeds; (b) a seed.

The foregoing description, says Mr. Lindley, applies strictly to *R. canina*. "When this is weak, and grows in woods or shady places among grass, it has straight prickles, and becomes *R. nuda* of Woods: with very distinct aculei, it is *R. andegavensis* of Bastard; with very dense ones it is *R. canina* of Rau."

QUALITIES.—The fruit has no odour, but a pleasant, sweet, acidulous taste, which is said to depend on uncombined citric acid and sugar.

MEDICAL PROPERTIES AND USES.—The pulpy part of the hips of the dog-rose possesses no medical properties; but, beat up with sugar, forms a confection, which sometimes enters into the composition of demulcent electuaries. It is also employed to form calomel, antimony, &c. into pills; and is sometimes served up at table as a desert. The root has been recommended in hydrophobia. The Tartars boil the twigs and leaves in the place of tea, and the Siberians praise them for their reviving, stomachic qualities. The inhabitants of the Volga prepare a spirit from the flowers, by fermentation; and in the Ukraine they are made into a preserve with honey and sugar.

A reddish moss-like, prickly excrescence, erroneously called *Bedeguar*, *Rose sponge*, and by the French *Galle chevelue*, is frequently found upon the branches of the *Rosa canina*, and other roses. This excrescence is the habitation of the larva of a small hymenopterous insect, *Cynips Rosæ*, and was formerly celebrated for its supposed astringent power.

OFF. PREP.—Confectio Rosæ caninæ, L. olim. Conserva Cynosbati.



Crocus sativus.

CROCUS SATIVUS.

*Saffron Crocus.**Class III. TRIANDRIA.—Order I. MONOGYNIA.**Nat. Ord. ENSATÆ, Lin. IRIDES, Juss..*

GEN. CHAR. *Corolla* in six deep equal segments; tube longer than the limb. *Stigmas* convoluted.

SPEC. CHAR. *Leaves* setaceous. *Stigma* reflexed laterally, in three deep, linear, notched segments.

Syn.—*Crocus*, *Raii Syn.* 374; *Ger. Em.* 151. *f. Fuch. Hist.* 441. *f*; *Plin.* xxi. 6.

Crocum, *Matth. Valgr.* v. 1. 62. 63. *f*; *Camer. Epit.* 33. *f*.

Crocus autumnalis, *Eng. Bot.* v. 5. t. 343.

Crocus setifolius, *Stokes, Bot. Mat. Med.* v. 1. p. 104.

Crocus officinalis, *Huds. Fl. Angl.* 13, a; *Mart. Rust.* v. 2. t. 35.

Κρόκος et *Κρόκον*, *Hom. Illiad*, Ξ, 348; *Theophr.* vi. 6; *Diosc.* i. 25.

Crocus sativus, *Lin. Sp. Pl.* 54, a. *Willd.* v. 1. 194; *Fl. Brit.* 39; *Redoutè Liliac.* v. 3. t. 173; *Woodv.* t. 176.

FOREIGN.—*Saffran*, Fr.; *Safferano*, It.; *Azafran*, Sp.; *Acafrao*, Port.; *Safranplanze*, Ger.; *Schafran*, Rus.

OUR drawing of this beautiful and interesting *Crocus*, which affords the well known Saffron of the shops, was taken from specimens obligingly communicated to us by Mr. Fiske of Walden in Essex, where it was formerly much cultivated for medical use. It is a perennial, bulbous plant, and is supposed to have been originally brought from the East, where it first acquired that high reputation in medicine, which it has now almost lost in Europe. It is said that the saffron crocus was brought into England in the reign of Edward III., and that a Sir Thomas Smith introduced it into the neighbourhood of Walden, where it was probably first cultivated. It was, however, grown at an early period in Herefordshire; but it is now confined to a very small district in Cambridgeshire, at the foot of the Gogmagog hills. It appears to have been planted abundantly near Walden, at the end of the sixteenth and at the beginning of the seventeenth century. It

migrated gradually into Cambridgeshire between the years 1675 and 1723, where the place of its growth was the large tract of ground between Saffron Walden and Cambridge, in a circuit of about ten miles. At present, however, it is, we believe, but little attended to by the farmer, and is now confined to two or three parishes only, of which Stapleford is one. Saffron has long been extensively cultivated in many countries on the continent, particularly in France and Spain; but English Saffron is generally preferred here to that which is imported, and may be distinguished by its parts being larger and broader. The bulbs may be planted in dry, light soil; but they succeed best in sand. About the first week in October the flowers begin to appear; but it never produces seeds in this climate.

The saffron crocus has a roundish bulbous root, as large as a small nutmeg, which is solid, somewhat compressed, and covered with a coarse brown reticulated skin. From the bottom of this bulb are sent out many long slender fibres, which strike pretty deep into the ground, and are, properly speaking, the true roots. Immediately from the upper part of the bulb proceed the flowers on a long slender white tube, which together with the leaves are inclosed in a thin membranous sheath, opening on one side. The leaves are numerous, curved, linear, smooth, longer than the corolla, of a deep green colour, with a white central stripe, and are accompanied by the flowers. The corolla is large, and divided into six nearly elliptical segments, equal, and of a rich violet or lilac colour. The stamens are shorter than the corolla, and surmounted by arrow-shaped, erect, pale yellow anthers. At the bottom of the tube is situated a roundish germen, crowned with the style, which is thread-shaped, the length of the corolla, and hangs out at one side between the segments. The stigma is deeply 3-parted, of a deep orange colour, fragrant, narrow, a little dilated upwards, and notched at the summit.—Fig. (a) represents one of the segments of the corolla with a stamen and anther; (b) the 3-parted stigma, which is the officinal saffron.

DISTINCTIVE CHARACTERS.—Saffron differs from the spring crocus (*C. vernus*) in having the stigma divided into three very long narrow segments, which are notched at the summit, of a

deep orange colour, and fragrant. In the spring crocus the stigma is within the flower, divided into three wedge-shaped jagged lobes, which are inodorous, and the tube of the corolla is hairy at the mouth: while in the *officinalis* the throat of the corolla is smooth. The naked-flowering crocus (*C. nudiflorus*) is readily distinguished from the other two by the deeply-laciniated tufted segments of the stigma, and by the flowers, which are of a deep purple, appearing in autumn unaccompanied by leaves; the latter not being produced till December.

Saffron is unquestionably a native of Greece and Asia Minor, having been introduced into the south of Europe for cultivation as a medicinal plant; but it has naturalized itself in some parts of England, and is retained by Smith in the English Flora, on the authority of the Rev. Mr. Wood, who found it about Halifax, and of Mr. Whatly, who observed it near Derby. Of this genus Miller admits only two species, the autumnal saffron, *C. sativus*, and the spring crocus, *C. vernus*. Sir J. E. Smith describes three species as natives of Britain, *C. vernus*, *nudiflorus*, and *sativus*: of the former there are several varieties, blue and purple, yellow, white, and striped. Linneus reduces all the species to one, and supposes the vernal, and the autumnal, or officinal crocus to be only varieties, notwithstanding the difference in the form of their stigmas, leaves, and bulbs, as well as in the time of their flowering. Besides these, the following species are cultivated in crocus beds:—*C. versicolor*, or party-coloured crocus, a kind which requires a light loam, while most of the others grow best in sand; *C. biflorus*, or yellow bottomed; *C. mæsiacus*, or great yellow; *C. susianus*, or cloth of gold; *C. sulphureus*, or sulphur-coloured; and *C. serotinus*, or late-flowered, blossoming in autumn, the leaves appearing at the same time with the flower. The Scotch crocus is said by Mr. Neill to be a beautiful striped variety.

The unpolluted organs of which this flower is robbed to form saffron, were early known to the Romans; as we find that the Cilician physicians who attended Anthony and Cleopatra in Egypt, recommended saffron as a medicine that cleared the complexion, by relieving the jaundice or the bile: which is an early indication of the prevalence of the “doctrine of signatures,” for

which the sect termed “*Rosycrusians*,” or “*Theosophists*” became so notorious in the beginning of the 14th century. Dioscorides says that it is good for a surfeit. Pliny informs us that the best saffron grew in Cilicia, or a mountain called Corycus, and that the next in quality on Mount Olympus. The Sicilian saffron was also esteemed by the Romans, who used it as a perfume. According to Pliny, it was steeped in wine, and then sprinkled over the theatres, filling every part with a sweet odour. The same author says, the wild crocus produces the best saffron, therefore the planting of it in gardens was deemed bad husbandry, for the plants became strong and large ; while the flowers yielded but few chives, and would not pay the expence of planting. In a work, comparatively modern, (Townsend’s Travels in Spain,) the plant is mentioned as growing in abundance in the neighbourhood of Salamanca, where, without cultivation, it affords excellent saffron. Saffron is the *κροκος* of the Greeks ; and is mentioned by Homer as one of the flowers that formed the genial couch of Jove and Juno :—

ἽΗ ῥα, καὶ ἀγκὰς εἴμαρπτε Κρόνου παῖς ἦν παράκοιτιν·
 Τοῖσι δ’ ὑπὸ Χθῶν δῖα φύεν νεοθηλέα ποίην,
 Λωτόν θ’ ἐρσήεντα, ἰδὲ κρόκον, ἥδ’ ὑάκινθου
 Πυκνὸν καὶ μαλακόν· ὃς ἀπὸ χθονὸς ὑψὸς ἔεργε·
 Τῷ ἐνὶ λεξάσθεν, ἐπὶ δὲ νεφέλῃν ἔσσαντο
 Καλὴν, χρυσεῖην· σιλπναὶ δ’ ἀπέπιπτον ἔρσαι.

Iliad, Lib. xiv. 346.

from whence it has been inferred, that exhilarating properties were ascribed to it even in his days. Lindestolpe suspects that it was the *νεπενθης*, *nepenthes*, of Homer ; while other writers have affixed this appellation to the *Inula Helenium* and *Borago*.

Our plant is the *zaffaran* or *zahafaran* of the Arabians, and was highly esteemed by the Hebrews, who called it *carcom*. It is the *Crocus* of the Latins, who named it after a beautiful youth, who was said to have been consumed by the impatience of his love for *Smilax*, but was, by Hercules his father, changed into this flower, while *Smilax* was metamorphosed into the plant called by his name, *Smilax*, or *Bindweed*. Ovid commemorates this fable :—

“*Et crocum in parvos versum cum Smilax flores.*”

Virgil also speaks of the crocus as one of the flowers upon which bees love to feed :—

———“pascuntur et arbuta pastim,
Et glaucas salices, casiamque, crocumque rubentem,
Et pinguem tilium, et ferrugineos hyacinthos.”—GEORG. 4.

By the old Chemists saffron was called, from its golden colour, *Aurum Philosophorum*; by others, *Sanguis Herculis*, *Aurum Vegetabile*, *Rex Vegetabilium*, and *Panacea Vegetabilis*. Its English name is evidently derived from its Arabian; which is nearly the same in French, Dutch, and German.

CULTURE.—As several botanists with whom we conversed were ignorant of the habits of this plant, and as it is imperfectly described in a work, which passes for an authority, we took the pains to obtain specimens from Samuel Fiske, Esq. of Saffron Walden, a gentleman who once cultivated it, and who is an accomplished botanist. In his communication, for which we are greatly indebted, he says, “The bulbs of the *Crocus sativus* are planted in July, in a rich light mould, with some well rotted manure, in rows six inches apart, and three inches distant from each other in the rows.

“About the 18th of September, the leaves, or grass as it is called, begin to appear in small pencil-like tufts, and during, and after the period of flowering, keep growing, and gradually cover the whole bed, continuing green all the winter, until May, when they die away, and the bed is bare all the next summer.

“The flowers begin to spring up about the 3rd of October, with a stem about an inch above the ground; they continue daily coming up for three or four weeks, six, eight, or more rising in succession from one plant. They are gathered every morning during the time of flowering, and the stigmata or chives, with part of the style plucked out for use, the rest of the flower being thrown away.

“The saffron, thus procured, is either dried in a room, in the sun, on papers, or made into cakes by a moderate heat and pressure,

“At the end of three years, when the leaf is entirely dead, the

bulbs are taken up and cleaned, and the largest set by for planting again.

“ The increase in the bulbs is very great, but being of no use except for replanting, what are not wanted for that purpose are thrown away ; and as the produce of the saffron does not repay the expences, it is now entirely out of cultivation here as an article of commerce.”

QUALITIES AND CHEMICAL PROPERTIES.—Saffron has a powerful, penetrating, diffusive odour, and a warm, pungent, bitterish taste. It gives out the whole of its virtues and colour to rectified spirit, proof spirit, wine, vinegar, and water, and in a smaller degree to ether ; about three parts in four of the saffron being taken up by each of these menstrua, and the matter which remains undissolved is inodorous, insipid, and of a pale clay colour. The acetous, and even vinous tinctures of saffron, on long keeping, lose a little of their colour and strength ; but those made with rectified spirit remain good for years. In distillation it impregnates water strongly with its flavour. If the quantity of saffron be large, a small portion of a fragrant and very pungent oil may be collected, amounting, as Vogel says, to about $1\frac{1}{2}$ drachm from 16 ounces. Rectified spirit also elevates a considerable share of its flavour, but much the greater part is concentrated in the extract. The watery infusion, which has the deep orange-red colour of the saffron, is rendered of a very deep purple by strong sulphuric acid, the mixture emitting the smell of vinegar, and yielding a copious black precipitate when diluted by water : the oxymuriatic acid produces a copious yellow precipitate, the liquid only retaining a pale lemon colour. Hence it may be inferred that saffron contains chiefly extractive, which, according to Hernbstaedt, is nearly pure, and in proportion of 10 parts in 16 of the vegetable, the remainder being chiefly ligneous fibre. It contains also a small portion of resin.

According to an analysis by M. M. Vogel and Bouillon Lagrange (Ann. de Chim. xxx. 188,) Saffron is composed of a substance termed,

<i>Polychroite</i>,	.	.	.	.	.	6 . 50
Odorous Volatile Oil, ()	.	.	.	

Wax,	.	.	.	.	.	.	0 . 50
Gum,	.	.	.	.	.	.	6 . 50
Albumen,	.	.	.	.	.	.	0 . 50
Salts of lime, potass, and magnesia,	.	.	.	.	.	.	10 .
Water,	.	.	.	.	.	.	10
Vegetable <i>debris</i>,	.	.	.	.	.	.	10

Polychroite is in the form of powder, of an intensely yellow colour. It attracts moisture from the atmosphere ; is very soluble in water and alcohol ; somewhat soluble in sulphuric ether ; insoluble in the oils. It is combined with a fixed oil, which may be separated by the action of alkalies. It has a bitter, pungent taste, and a strong, fragrant odour. It is obtained from the stigmas of the crocus, by evaporating a watery infusion to the consistence of honey, which is digested in alcohol ; filter the solution and evaporate to dryness. The dried mass is the *Polychroite* in a pure state.

ADULTERATIONS.—Even in the time of Pliny, saffron was adulterated : and the best way of trying it, says he, is to lay the hand on it, when, if good, it will be heard to crack or snap : from which we presume the saffron was a dry sort. He further states, that after handling it, if the hand be put into the mouth, it will cause a stinging sensation in the face and eyes if it be good ; and on being chewed, stains the spittle and teeth. It is still often adulterated with the petals of *Carthamus tinctorius* and *Calendula officinalis* ; by expanding the suspected article in hot water, the *petals* of the fraudulent additions will be readily found.

MEDICAL PROPERTIES AND USES.—“ The writers on *materia medica*,” says Dr. Cullen, “ have constantly spoken of it as a very active medicine ; but their reports of its effects are in some instances manifestly extravagant, though repeated by Boerhaave himself ; and very frequent experiments in practice do not at all support the opinions that have been commonly entertained of it. I have given it in large doses, without its showing any sensible effects ; hardly in any degree increasing the frequency of the pulse ; and as anodyne or antispasmodic, I have hardly observed its operation.”

Schroder asserts, that if taken to the quantity of two or three

drachms it proves fatal; and by several authors we are informed, that in large doses it produced cephalalgia, intoxication, and mania. It is also said to be plentifully absorbed and to tinge the various textures of the body. From direct experiments, however, made by Dr. Alexander, saffron evidently possesses but little active power over the great majority of mankind, when given even in very large doses; and Dr. H. Cullen administered it in the quantity of half an ounce a day, in several hysterical cases, without any sensible effect. It has often been accused of producing great hilarity, which is again contradicted by Bergius, whose words are, "*Nobilis matrona semper in tristitiam illapsa est ingentem, postquam pulveres crocatos ei proprinaveram.*"

Saffron is now discarded from practice as a medical agent; but still enters into the composition of several officinal preparations, to impart an odorous flavour and its rich colouring matter.*

OFF. PREP.—*Confectio aromatica.* L. D.

Decoctum Aloes comp. L.

Pilula Aloes c. myrrha. L.

Syrupus Croci. L.

Tinctura Aloes comp. L.

———— *Aloes.* D.

———— *Cinchonæ comp.* L.

———— *Croci-sativi.* E.

———— *Rhæi.* L.

———— *Rhæi comp.* L.

* AMERICAN SOOTHING SYRUP.—This vile nostrum, which is puffed off in the newspapers "as a real blessing to mothers," is nothing more than syrup of saffron, with a portion of nitrate of potass or saltpetre, and laudanum!



Myrciylon peruviferum

Weddell. Escut.

MYROXYLON PERUIFERUM.

Sweet-smelling Balsam-tree of Peru.

*Class X. DECANDRIA.—Order I. MONOGYNIA.**Nat. Ord. LOMENTACEÆ, Lin. LEGUMINOSÆ, Juss.*

GEN. CHAR. *Calyx* bell-shaped, 5-toothed. *Petals* five, the upper one larger than the others. *Germen* stalked, longer than the corolla. *Legume* with one seed only, at the point.

SPEC. CHAR. *Leaflets* pointed, emarginate. *Claw* of the larger petal twice the length of the calyx.

Syn.—Huitziloxitl, *Hernandez Nova Plant. &c. Mexican. Hist.* fol. 51. f.

Cabureiba, *Piso. Bras.* 57. 119.

Toluifera Balsamum, *Lin. Sp. Pl.* 549; *Woodv. v. 3. t. 193.*

Myroxylon peruiferum, *Willd. Sp. Pl. v. 2. 546*; *Stokes, v. 2. p. 471*; *Lam-
bert Illustr. of the Genus Cinchona*, p. 92.

FOREIGN NAMES OF THE BALSAM.—*Baume de Perou*, Fr.; *Balsamo del Peru*, It.;
Balsamo de Quinquica, Sp.; *Peruvianischer Balsam*, Ger.

THE Sweet-smelling Balsam-tree, which yields the precious balsams of Peru and Tolu, is a native of the warmest provinces of Mexico and Peru. It grows in the mountains of Panatahuas, in the forests of Puzuzu, Muna, Cuchero, Paxaten, Pamphaermosa, and in many other countries near the river Maranon, in low, warm, and sunny situations, blossoming in August, September, and October. The natives of the country call the tree by the name of *Quinquino*, and its bark and fruit by that of *Quinquina*. Hernandez says that the Mexican kings cultivated it in their gardens, and that if the trunk or bark be wounded, at any time of the year, but especially at the end of the rainy season, the celebrated and valuable balsam of Peru distils from the wound; “this is of a dark or blackish-orange colour, of an acrid and

somewhat bitter taste, a most powerful but highly agreeable smell." It was discovered by the celebrated Don Jose Cælestino Mutis, of Santa Fe de Bogota, New Granada, who sent specimens of the leaf, flowers, and fruit, to the younger Linneus about the year 1781. The plate which illustrates the following description is taken by permission from Mr. Lambert's valuable work "on the Genus Cinchona," and was made from very fine specimens received from the distinguished author of the "Flora Peruviana et Chilensis," Don Jose Pavon.

It is described by Don Hippolito Ruiz, as a branching and elegant tree, growing to the height of thirty *varas* and upwards. The trunk is thick, straight, smooth, and covered like the branches with a grey, coarse, compact, heavy bark, granulated, of a pale straw colour interiorly, and filled with a fragrant resin, which abounds in every part of the tree. The branches extend almost horizontally. The leaves are alternate, and composed of two, three, four, and sometimes five pair of leaflets, nearly opposite, and ovate-lanceolate acute, but with the apex somewhat obtuse and emarginate, smooth, shining, entire, marked with translucent linear points, like those of the orange-tree, hairy on the under surface, and standing on short footstalks. Many leaves terminate unequally, and in this case consist of five, six, or nine leaflets. The flowers spring from the scars of the young branches, and from the axillæ of the leaves in long downy erect racemes, longer than the leaves, on slender stalks, scarcely an inch long, with a small, concave, ovate bractea at the base of each. The calyx is bell-shaped, dark green, divided into five small, nearly equal teeth, but with one of them so far separated from the rest as to be found under the germen. The corolla is composed of five white petals, four of these narrow, equal, lanceolate, and larger than the calyx; the fifth reflexed, broad, and double the size of the others. The filaments are ten, inclining and inserted into the calyx; bearing elongated, sharp-pointed, sulcated anthers. The germen is oblong, pedicellated, inclining with the stamens to the same side; the style short, awl-shaped and crooked, with a simple stigma. The pericarp or seed-vessel is pendulous, straw-coloured, nearly six inches in length, club-shaped, somewhat curved, globular near the top, and terminated by the curved style.

It contains in a cell in the globular part, a single seed, which is crescent-shaped, projecting from the cell, and between this and the lining of the pericarp is filled with a yellow liquid balsam, which in time dries and becomes as hard as resin.—Fig. (*a*) represents a flower magnified; (*b*) the curved germen surrounded by the bell-shaped calyx; (*c*) the one-celled pericarp, showing the projecting seed; (*d*) the crescent-shaped seed.

“The balsam of Quinquino,” continues Ruiz, “is procured by incision at the beginning of spring, when the showers are gentle, frequent, and short; it is collected in bottles, when it keeps liquid for some years, in which state it is called, ‘*white liquid balsam*.’ But when the Indians deposit this liquid in mats or calabashes, which is commonly done in Carthagena, and in the mountains of Tolu, after some time it condenses and hardens into resin, and is then denominated, ‘*dry white balsam, or balsam of Tolu*,’ by which name it is known in the druggist’s shops.

“It is generally believed, and M. Valmont de Bomare says, in his Dictionary of Natural History, that if an extract be made from the bark, by boiling it in water, it remains liquid and of a blackish colour, known under the name of ‘*Black Peruvian Balsam*.’

“The Indians of Puzuzu, and of some other parts of South America, do not collect the balsam of this tree: whether it is, that they are ignorant of the method of obtaining it, and of its value, or because few trees are found in the neighbourhood of their towns, the only parts which they collect, are the barks most filled with resin, condensed into drops and lumps, and the fruit, in order to sell them in the neighbouring provinces, both of which are used for the purpose of perfuming clothes and apartments.

“The fruit, as well as the bark, being reduced to a coarse powder, they mix with it oil of Maria, Carana, Jacamaca, Lera, or Sebo, and make with it little plasters, which they apply upon the temples and behind the ears, to mitigate the pains of the head-ache and the tooth-ache, particularly the hemicrania.”

QUALITIES AND CHEMICAL PROPERTIES.—The BALSAM OF PERU* has the consistency of honey, a brown colour, an

* A “*balsam*” is a substance possessing the general properties of a resin; but, when heated, or digested in acids, yields benzoic acid.

agreeable smell, and a hot acrid taste. When boiled with water for some time, the liquid separated by the filter reddens vegetable blues, and deposits crystals of benzoic acid in cooling. The water contains no other substance.* When distilled with water, it yields a very small quantity of reddish limpid oil; and benzoic acid sublimes in the neck of the retort. At 550° the balsam begins to boil, when exposed to heat in a water bath, and some gas is discharged. At 594° the oil, mixed with a little water, comes over pretty fast. At 617° it comes over still more rapidly. Lichtenberg, to whom we owe these experiments, kept four ounces of balsam at that temperature for two hours, and obtained two ounces of a yellowish oil, and a crystallized mass of benzoic acid, which, together with the water, weighed $6\frac{1}{2}$ drachms. The gas obtained amounted to 58 ounce measures; 38 being carbonic acid. The rest burn like olefiant gas.

Saturated solutions of the alkalies and their carbonates form a thick mass when mixed with the balsam; and a solution, when saturated with sulphuric acid, deposits crystals of benzoic acid. Treated with nitric and muriatic acids, the presence of prussic acid is indicated, benzoic acid sublimes, and Mr. Hatchett found that the residue possessed the properties of artificial tannin. When this balsam is treated with sulphuric acid, artificial tannin is also formed, and the residual charcoal amounts to no less than 0.64 of the original weight of the balsam.†

TOLU BALSAM, which was formerly supposed to be the produce of another tree, comes to England in gourd shells. It is of a reddish brown colour, and considerable consistence; and when exposed to the air becomes solid and brittle. Its smell is fragrant, and continues so even after the balsam has become thick by age. When distilled with water it yields very little volatile oil, but impregnates the water strongly with its taste and smell. A quantity of benzoic acid sublimes, if the distillation be continued.‡ Like the rest of the balsams, it is soluble in the alkalies. When digested in sulphuric acid, a considerable quantity of pure benzoic acid sublimes; and when the solution is evaporated to dryness,

* Lichtenberg, Gehlen's Jour. vj. 489.

† Hatchett's Third Series of Experiments on Artificial Tannin, Phil. Trans. 1806.

‡ Lewis, Neumann's Chem. p. 285.

and the residue treated with alcohol, artificial tannin is obtained. When dissolved in nitric acid, it presents nearly the same phenomena as the resins ; but assumes the odour of prussic acid. During the solution in nitric acid, a portion of benzoic acid sublimes. By repeated digestions it is converted into artificial tannin.

MEDICAL PROPERTIES AND USES.—*Peruvian balsam* resembles the balsam of Copaiba in its medicinal virtues ; it is however more heating, and does not relax the bowels in its usual doses. It has been employed as an expectorant in catarrh and dyspnæa, when attended by an increased secretion of mucus ; and from its stimulating the stomach, or from a similar action on the exhalents or absorbents of the lungs, it has been found serviceable. In consequence of its stimulating and tonic powers, it has been prescribed as a remedy in paralysis, chronic rheumatism, and leucorrhœa ; and in combination with calomel, it has been efficaciously administered for the tremors which arise from the noxious influence of lead. At one period it was held high in repute as a detergent application to wounds and ulcers. Kirkland and Rowley attest its efficacy in high terms of commendation : and in those irritable ulcers of the leg, which have a glassy surface, and are devoid of granulations, it was much employed by the late Mr. Whately ; and in our own practice, we place great reliance on it. It has also been much employed as a local application to gangrenous affections, and a case is recorded by Mr. Smith in the “*Lancet*,” of a chancre, attended with phimosis and extensive ulcerations of the prepuce, readily yielding to its power. The mode of applying it, is by drenching a piece of lint in it, which is to be laid on the diseased part ; night and morning, till healthy granulations appear.

Dose.—From thirty drops to a drachm, repeated at proper intervals.

MISTURA BALSAMI PERUVIANI.

R	Balsami Peruviani	ʒij
	Mellis depurati	ʒi
	Misturæ Amygdalæ	ʒviſs

Fiat Mistura, cujus sumat cochlearia tria magna sexta quaque hora.

BALSAMUM PERUVIANUM CUM FELLE BOVINO.

R Fellis Bovini 5ij
Balsami Peruviani 5i Misce.

Dr. Hugh Smith recommended this application to be occasionally dropped into the ear, when there is a fetid discharge from it; but these articles do not readily combine.

UNGUENTUM BALSAMI PERUVIANI.

R Balsami Peruviani 5i
Unguent. Cetacei 5vij Misce.

This is a useful application for ulcers requiring a gentle stimulus; and is a favourite and efficacious remedy for cracked nipples.

TOLU BALSAM.—This balsam is stimulating and expectorant, and is the mildest of all the balsams. Its tincture and syrup are occasionally added to mucilaginous mixtures when prescribed for chronic coughs; but Tolu balsam is little valued, excepting for its pleasant flavour. In gleet it is sometimes useful, and has been applied to wounds and ulcers, when a slight stimulus was required.

OFF. PREP.—Syrupus Tolutani. L.

Tinctura Benzoini comp. L. E. D.

——— Toluiferæ Balsami. E. D.



Polygala senega

POLYGALA SENEGA.

Rattle-snake Milkwort.

Class XVII. DIADELPHIA.—Order III. OCTANDRIA.

Nat. Ord. LOMENTACEÆ, Lin. PEDICULARES, Juss.
POLYGALÆÆ, De Cand.GEN. CHAR. *Calyx* 5-leaved, with two of the leaflets wing-like and coloured. *Standard* of the *corolla* cylindrical. *Capsule* obcordate, 2-valved, and 2-celled.SPEC. CHAR. *Leaves* alternate, lanceolate. *Flowers* alternate, beardless. *Spike* terminal, slender, solitary, tapering. *Stem* erect, simple, herbaceous, leafy.*Syn.*—*Planta Marilandica*, (*Polygala* ?) caule non ramoso, spico in fastigia singulari e flosculis albis composita, *Raii Syn.* 640.*Polygala* caule simplici erecto, &c. *Gron. Flor. Virg. ed. 1.* p. 80.*Polygala* floribus imberbibus spicatis, &c. *Gron. Virg.* 103.*Polygala Senega*, *Lin. Sp. Pl.* 990; *Willd. v. 3.* 894; *Amæn. Acad. 2.* p. 139. t. 2; *Michaux Flor. Amer. Bor. 2.* p. 53; *Woodv. v. 2.* t. 93; *Stokes v. 3.* 504; *Bot. Mag. v. 26.* t. 1051; *Barton Mat. Med. U. S. v. 2.* p. 111. t. 36; *Bigelow, Amer. Med. Bot. t.* 30.ENGLISH.—*Seneka Snake-root*; *Rattlesnake-root*; *Officinal Milkwort*, or *Snake-root*; *Seneka*.FOREIGN.—*Polygalaie de Virginie*; *Senega*; *Racine de serpent à sonnettes*, Fr.; *Polygala Virginiana*, It.; *Senegawurz*; *Klapperschlangenwurz*, Ger.

THE *Polygala Senega* is a hardy perennial, a native of North America, growing in most latitudes in the United States, on the sides of hills and in dry woods. It is abundant in Kentucky, Ohio, and Tennessee; flowering from June to August. It was first cultivated in England by Philip Miller in 1759; but having little beauty to boast, it is rarely met with in our gardens. There is a variety with whitish flowers in a dense spike or cluster, and another with rose-coloured flowers in a lax spike and narrower

leaves. The rose-coloured variety, as it has been considered by Michaux and Pursh, is said to be a distinct species. Some varieties, which Professor Bigelow possesses from Carolina, have branching, pubescent stems, and very long loose spikes. Of this genus M. De Candolle enumerates above one hundred and sixty species, growing in every quarter of the globe; but one only, *Polygala vulgaris*, or common Milkwort, is British.

The root of *Polygala Senega* is woody, branched, contorted, about half an inch in diameter, and covered with a thick dull yellowish or greyish bark; it sends up several annual stems, about a foot in height, erect, slender, round, simple, smooth, of a dull purple colour below, and greenish towards the top. The leaves are alternate, scattered, lanceolate, pointed, smooth, somewhat undulated, occasionally tinged with red, and nearly or quite sessile: towards the base they are smaller and nearly ovate. The flowers are in loose, terminal spikes, papilionaceous, generally white, often tinged with purple, and sometimes pale yellow. The calyx, which in this genus is the most conspicuous part of the flower, consists of five leaflets; the two largest of which are roundish-ovate, white, and slightly veined. The corolla is small, closed, having two obtuse lateral segments, and a short crested extremity. The stamens are all united at the bottom, and attached to the corolla; with eight tubular anthers opening at the summit. The fruit is an obcordate, compressed, 2-celled, 2-valved capsule, containing two oblong-obovate, slightly hairy, curved, blackish seeds. The spike opens gradually, so that the lower flowers are in fruit while the upper ones are in blossom.—Fig. (a) represents the three smaller leaves of the calyx; (b) the different parts of the papilionaceous corolla, &c.; (c) the capsule and seeds; (d) the root.

The generic name is compounded of two Greek words, *πολυς*, *much*, and *γαλα*, *milk*, in allusion to its reputation of increasing the secretion of milk in those animals that partake of it. But at this time, the species which gave origin to this idea is not known.

QUALITIES AND CHEMICAL PROPERTIES.—The root of the *Polygala Senega* has little or no smell; but to the taste is bitter,

pungent, subtle, and peculiar. After chewing, it leaves a sensation of acrimony in the mouth, and still more so in the fauces, if it have been swallowed. Both aqueous and spirituous menstrua extract its virtue; but the alcoholic most completely. The powder in substance is, however, more active than either the tincture or decoction. The bark of the root contains the most active power of the plant; the ligneous portion being comparatively inert. Alcohol dissolves a substance apparently of the resinous kind, giving a precipitate when water is added. Iron produces little change in solution of this root, and gelatin occasions no alteration whatever.

A peculiar vegetable principle has recently been discovered by Gehlen, in the root of the *Polygala Senega*, to which he has given the name of *senegin*. It is obtained by treating the alcoholic extract with water and ether; the latter abstracting a portion of resin, and the former dissolving a little mucilaginous and saccharine matter. It is a solid substance of a brown colour, and excites violent sneezing like tobacco. It has a disagreeable taste, is soluble in alcohol, but insoluble in water and ether.

M. Reschier is also said to have isolated from six ounces of the root of *Senega*, a hundred grains of a peculiar alkaline principle, '*Polygaline*;' which is united to an acid termed, '*Polygalinique*.' It is regarded as a substance *sui generis*, and as containing the active principle of the plant; but we know not whether it be identical with the *senegin* of Gehlen.

ANALYSIS BY

Fenuile, <i>Journ. Chim. Med.</i> ii. 437.	Dulong, d'Astafort, <i>Journ. Pharm.</i> 1827, 567.
Colouring matter, of a pale yellow.	Peculiar alkaline matter.
Bitter matter.	Resin.
Gum.	Gummy matter.
Pectic acid.	Colouring do., analogous to wax.
Albumen.	Yellow matter.
Volatile oil.	A substance turning to red by the action of sulphuric acid.
Fatty oil.	Pectic acid.
Malate of lime.	Phosphate of lime.
Sulphate, carbonate, and phosphate of lime.	Malate of potass and lime.
Carbonate of potass.	Sulphate of potass.
Chloruret of potassium.	Chloruret of potassium.
Silex.	Iron.

MEDICAL PROPERTIES.—This root is sudorific and expectorant in small doses, and emetic and cathartic in larger ones. More than ninety years have elapsed since Dr. Tennant, of America, invited the attention of physicians to this medicine as an antidote to the bite of the rattle-snake; and a reward was voted him by the legislature of Pennsylvania for the promulgation of this supposed property. It was from the Senagaroots, a tribe of Indians, that he obtained a knowledge of this their secret remedy; which they applied externally and internally. Dr. Tennant himself saw, or thought he saw, beneficial effects ensue: but when we consider the number of cases of recovery from the bite of this serpent, under every variety of treatment, as recorded in many American publications, we naturally infer that spontaneous recoveries are perhaps as frequent as those which are promoted by medicine.

More certain success appears to attend the use of Senega in pneumonia and some diseases related to it. In the advanced stages of pneumonic inflammation, after venesection and the other usual remedies have been carried to their proper extent, and the cough still remains dry and painful, the debility of the patient forbidding further depletion, it is said to afford very marked relief by promoting expectoration, and relieving the tightness and oppression of the chest. Various medical writers have spoken favourably of its employment in these cases, amongst whom are Bigelow, Bonvart, De Jussieu, and Lemory.

Benefit has been derived in asthma from the use of the plant. “Decoction of Seneka,” says Dr. Bree, “is eminently useful in the first species, administered to old people; but in the paroxysms of young persons I have found it too irritating. This distinction applies to convulsive asthma purely uncomplicated, but the disease is frequently observed in middle-aged and elderly persons to take the character of *peripneumonia notha* in the winter and spring, and seneka is then the most useful medicine that I have tried. In such cases it should be united with the acetated ammonia, during the febrile state, and as this state gives way, the addition of squill and camphorated tincture of opium will be found to promote expectoration, perspiration, and urine in a most powerful manner.”

Sir Francis Millman, Dr. Percival, and others, have spoken highly of it as a diuretic in dropsies; and in consequence of its well ascertained power of exciting salivation, it was introduced into notice by Dr. Archer of Maryland, as a remedy of great power in croup. In the early stages of this complaint, however, it may be questioned, as Professor Bigelow justly observes, how far a medicine, which acts as a stimulant to the fauces and neighbouring organs, is entitled to reliance in a local inflammation of the trachea. Dr. Barton and other celebrated medical practitioners in America, place great reliance on it as an auxiliary to the other remedies that are usually employed in croup; and a series of well conducted experiments by any able man in our country, to ascertain its real merits in this disease, would be a boon gratefully received by the profession. Dr. Archer's mode of administering it is, to give a tea-spoonful of a strong decoction once or twice in the hour, according to the urgency of the symptoms; and during the intervals, a few drops occasionally, to keep up a sensible action upon the mouth and throat, until it acts as an emetic or cathartic.* For amenorrhæa, a saturated decoction, given to the extent of a pint in twenty-four hours, commenced about a fortnight before the expected menstrual period, has been found a very beneficial practice. In consequence also of its universally stimulant and diaphoretic effects, it has been found a powerful remedy for chronic rheumatism.

Dose.—In powder, from twenty to thirty grains.

DECOCTUM SENENGÆ. *L. E.*

“Take of the root, *one ounce*, water, *two pints*. Boil down to a pint and strain.” Dose, one to three ounces three or four times a day.

* Mr. Morson, of Southampton Row, well known to the profession by his valuable collection of articles of the *Materia Medica*, and by his scientific acquirements as a chemist, has lately imported a considerable quantity of this root.

POLYGALA RUBELLA.—*Bitter Milk-wort.*

SPEC. CHAR.—“ *Stems* simple. *Leaves* linear, oblong, mucronated. *Flowers* racemed; those of the stem winged; those of the root apterous.”—*Big.*

Syn.—*Polygala Rubella*, *Muhlenberg, Catal.*; *Bigelow Amer. Med. Bot. t. 54*; *Pursh. v. 2. 464*; *Willd. Sp. Pl. v. 3. 875*, *Nuttall Gen. 2. 87*.

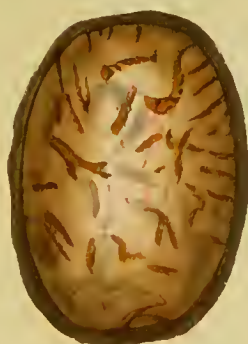
NATIVE of North America, in dry, gravelly, or sandy soils; flowering in June and July.

The root somewhat fusiform, perennial, and branching. Stems numerous, ascending, smooth, angular, simple. Leaves scattered, smooth; the lower ones obovate, smaller; the upper ones linear-lanceolate, obtuse, mucronated, sessile. Flowers purple, short-crested, in terminal racemes: bractes small, ovate-lanceolate, caducous: corolla small, of three segments, the middle one largest and crested.

MEDICAL PROPERTIES.—Like some of the European species, this plant is a powerful bitter, imparting its sensible properties both to water and to alcohol. It has long attracted the notice of medical practitioners in the United States of America, and is administered in small doses as a useful tonic and stimulant to the digestive organs. In large doses it operates as a cathartic, and excites diaphoresis. “Its powers,” says Dr. Bigelow, “appear to resemble those of *Polygala vulgaris*, and *P. amara* of Europe, to which it has a close botanical resemblance; and which have enjoyed a certain degree of medicinal reputation as tonics and expectorants.”



Myristicifolia



schala

MYRISTICA MOSCHATA.

Aromatic, or True Nutmeg Tree.

Class XXII. DICECIA.—Order XII. MONADELPHIA.

Nat. Ord. LAURI, Juss. MYRITICEÆ, Brown.

GEN. CHAR. Male. *Calyx* 0. *Corolla* bell-shaped, 3-cleft. *Filaments* united in a columnar tube. *Anthers* 6 or 10 cohering.

Female. *Calyx* 0. *Corolla* bell-shaped, 3-cleft, deciduous. *Style* 0. *Stigmas* 2. *Seed* solitary, inclosed in a coriaceous many-cleft tunic (Mace).

SPEC. CHAR. *Leaves* elliptic-oblong, smooth, pointed, paler beneath, with simple parallel nerves. *Perianth* of one leaf, coriaceous, urceolate. *Peduncles* with few flowers.

Syn.—*Nux moschata*, fructu rotundo, *Bauh. Pin.* 407; *Pluk. Phyt. t.* 219;

Nux Myristica seu *Pala*, *Rumph. Herb. Amb.* v. 2. p. 14. t. 4.

Myristica aromatica, *Lam. Act. Par.* 1788. p. 155. t. 5—7; *Lam. Dict.* v. 4. p. 385; *Lam. Ill. t.* 382; *Roxb. Pl. of Corom.* v. 3. t. 267.

Myristica officinalis, *Lin. Suppl.* p. 265; *Gært. de Fruct.* v. 1. p. 194. t. 41. f. 1; *Hook. Exot. Fl. t.* 155, 156; *Bot. Mag. N.S.* v. 1. t. 2756—2757.

Myristica moschata, *Willd. Sp. Pl.* v. 4. p. 869; *Spreng. Syst. Veg.* v. 3. p. 64; *Thunb. in Act. Holm.* 1782. p. 45; *Woodv. t.* 134.

FOREIGN.—*Le muscadier*; *Noix muscade*, Fr.; *Moscada*; *Nuez moscada*, Sp.; *Moscadeira*; *Noz moscada*, Port.; *Muskatnuss*, Ger.; *Muskot-trad.*; *Juêphal*, Hind.; *Jatiphalo*, Sans.; *Pela*, Malay.—Of the MACE. *Macis*, Fr. It.; *Macias*, Sp.; *Moshat blumen*, Ger.; *Jawatri*, Hind.; *Jatipatri*, Sans.; *Benga Pela*, Malay.

THE Nutmeg, called *Nux myristica*, or balsam nut, by the old writers, from the Greek *μυριστικός*, *balsamica*, is a diœcious tree, a native of the Moluccas, or Spice Islands; but is principally confined to that groupe denominated the islands of Banda, lying in

lat. 4° 30' south, where it bears blossoms and fruit all the year. The islands comprehended under this general name are Banda or Lantor, Neira, Pulo Ay or Way, Pulo-rohn, Pulo-pisang, Ros-singen, Pulo-prampon, Pulo-suanjee, Capal, and Gonong or Guenanape, the last being a volcanic islet rising two thousand feet above the level of the sea. They are all small, Banda proper or Lantor, one of the largest being only about eight miles long, and not more than three broad. The soil of all these islands, except that of Gonong, which is for the most part lava, is an exceedingly rich black mould, which renders them fertile in tropical fruits; but their chief and well-known production is nutmegs, for the cultivation of which Neira, Lantor, Pulo Ay, and Pulo-rohn are laid out in parks or plantations.

This tree is compared by Rumphius to a common pear-tree with respect to size and appearance; it is said to bear fruit at ten years growth, which improves in quality, and increases in quantity, until the tree has attained the age of an hundred years. The trunk rises to the height of twenty or twenty-five feet, clothed with a greyish-brown and tolerably smooth bark, abounding in a yellow juice, and bearing many whorls of spreading branches. The leaves, which stand alternately on short petioles, are from three to six inches long, subbifarious, oblong, glabrous, pointed, rather obtuse at the base, undulated, entire, of a dark green colour, and somewhat glossy above, beneath much paler, but neither pulverent nor downy; with simple, parallel nerves, a little branched at the extremities towards the margin, prominent, and of a brownish colour beneath. When bruised, the leaves are slightly aromatic. The flowers are present at the same time with the fruit, in axillary, subumbellate racemes, and are supported on smooth, subclavate foot-stalks, each pedicel or flower-stalk having a quickly deciduous bractea at the summit. The *male* flowers are from three to five or more on a peduncle. There is no calyx. The corolla or perianth is single, urceolate, and not inaptly compared by Rumphius to the flower of the *Lily of the Valley*, which it resembles in size and form; it is of a thick fleshy texture, clothed with a very indistinct pubescence, of a dingy pale yellowish colour, and cut into three, rarely into

four erecto-patent teeth at the extremity. The filaments are united into a whitish cylindrical column, rounded at the top, and having the upper half covered by about 11 longitudinal, linear-oblong, 2-celled anthers, free at their base, opening longitudinally, and charged with a yellow pollen. The *female* flowers are scarcely recognizable, at first sight, from the male, except that the pedicel is very frequently solitary, on the peduncle. The pistil is solitary, shorter than the corolla, broadly ovate, a little tapering upwards, into a short style, and bearing a 2-lobed persistent stigma. "As the germen swells the perianth falls away; the former then becomes obovate, and from its weight pendent, constituting nearly a spherical drupe, of the size and somewhat of the shape of a small pear. The flesh, which abounds in an astringent juice, is of a yellowish colour, and almost white within, four or five lines in thickness; this opens into two nearly equal longitudinal valves, and presents to view the *nut*, surrounded by its arillus or *mace*, which soon drops out, and the arillus withers: arillus thick, between horny and fleshy, much laciniated, folded and anastomosing towards the extremity, enveloping the nut almost entirely, and so lightly as to form inequalities on its surface. The colour when fresh is a brilliant scarlet. When dry it becomes much more horny, of a yellow-brown, and very brittle. Nut broadly ovate or oval, the shell very hard, rugged, dark-brown, glossy, about half a line thick, pale and smooth within. This immediately envelopes the seed (the nutmeg as sold in our shops) which is of an oval or elliptical form, pale brown, quite smooth, when first deprived of its shell, but soon becoming shrivelled, so as to have irregular, vertical lines or furrows on its surface. Its outside very thin; its inner substance or albumen is firm, but fleshy, whitish, but so traversed with red-brown veins which abound in oil, as to appear beautifully marbled. Near the base of the albumen, and imbedded in its substance, is situated the *embryo*, which is large, fleshy, yellowish white, rounded below, where is the radicle, its *cotyledons* of two, large, somewhat foliaceous, plicate lobes, in the centre of which is seen the plumule." The figure here given represents a MALE plant of the *Myristica moschata*, the natural size.—

Fig. (a) male flower cut open to show the column of stamens; (b) anther, copied from Roxburgh; (c) female flower cut open to show the pistil; (d) young fruit; (e) ripe fruit in the act of bursting; (f) section of a fully formed fruit, showing the nut included in the mace, *natural size*; (g) the mace from which the nut has been removed; (h) the nut; (i) the seed or nutmeg; (j) nut cut through vertically, showing the albumen and the embryo imbedded in the base of it; (k and l) the embryo—only the two last magnified.

According to Dr. Ainslie, the nutmeg-tree has of late years been cultivated at Batavia, Sumatra, and Pennang. An inferior and long-shaped kind of nutmeg is common in the island of Borneo, and there is a wild sort (*cat jadicai*) frequently to be met with in the woods of southern India, especially in Canara, which Dr. Buchanan thinks might be greatly improved by cultivation. The true nutmeg-tree now grows to a considerable size in certain sheltered situations in the Tinivelly district, especially at Courtalun, and bears pretty good fruit; it is also said to grow in the island of Ceylon, where it has obtained the Cingalese name of *sadikka*. Three other species of *myristica* are also said to grow in that country. Mr. Crawford, in his History of the Indian Archipelago, informs us that there are no less than eight cultivated varieties of this tree in the Indian islands; and M. de Comyn states that two sorts grow in the Phillippine islands, one shaped like a pigeon's egg, the other perfectly spherical.

The nutmeg has been supposed to be the *κώμακον* of Theophrastus, but there seems little foundation for this opinion; nor can it with more probability be thought to be the *χρικοβαλανος* of Galen. Our first knowledge of the nutmeg, as well as the clove, was evidently derived from the Arabians, long before the East India Islands were discovered by the Portuguese. By Avicenna, who flourished about the year 1160, it was called *Jiansiban* or *Jansiban*, which signifies *Nut of Bauda*. Rumphius who both figured and described this tree, says it was called by the Arabians *Giauzbaut*, *Jauzialbaud* and *Gjauz Bawa*, which means *Aromatic Nuts*. The figure given by Rumphius is, however, so imperfect, and the description so confused,

that Linneus, who gave it the generic name *Myristica*, was unable to assign its proper characters. Sonnerat's account of the *muscadier* is still more erroneous, and nothing was known of the plant that produced this precious fruit, till M. Ceré, director of the Royal Gardens, in the Isle of France, communicated specimens and observations to the Chevalier de Lamarck. For our beautiful drawing and description, we are indebted to Samuel Curtis, Esq. proprietor of the Botanical Magazine; the former of which was executed by the Rev. L. Guilding, who has supplied Dr. Hooker with many other of the figures that have embellished the new series of that valuable work.

In 1602, the Dutch having subjected the original inhabitants, were the first European occupiers of the Banda isles. In 1609, they entered into a treaty with the Oraucais or natives, who bound themselves to send all their nutmegs and mace to the Dutch fort of Nassau, in the island of Nera, at a fixed price, while the Dutch pledged themselves to defend the natives, particularly against the Portuguese. The breach of this agreement by the natives, and the murder of the Dutch commissary, occasioned hostilities between the two powers. In 1616, a similar treaty was entered into with the English, who were then at war with the Dutch; but this also was broken by the inhabitants of Banda. The English having refused, after they had made peace with the Dutch, to join them in the reduction of the Banda isles, the latter attacked them in 1621, and compelled the natives to deliver up their towns, their forts, their arms, and all their islands. In order to secure to themselves the nutmegs and mace which these islands produced, the Dutch erected forts in all the islands, and divided the soil into orchards, which they distributed among the Dutch colonists in proportion to the number of their slaves. The Banda isles were taken from the Dutch by the English Admiral Ranier in 1796, and in 1801 were restored to them by the treaty of Amiens.

The chief settlement of the Dutch is in the island of Nera, which has an excellent harbour, commanded by the cannon of the forts Belgica and Nassau. The island of Banda, which is about eight miles long, and five broad, contains twenty-five nut-

meg fields, which produce annually 570,000 pounds of nutmegs, and 140,000 pounds of mace, called the flower of nutmeg. The hurricane of 1778, however, nearly annihilated the nutmeg trees of this island. These nutmeg fields occupy about 70,000 square toises. In all the other islands nutmegs are also produced in more or less abundance, and even flourish amidst the lava of Gonong.

The real quantity of these valuable spices produced in the Banda isles, has been stated as follows:—In the year 1796, the annual produce was 163,000 pounds of nutmeg, and 46,000 pounds of mace. Between the years 1796 and 1798, the English East India Company imported 817,312 pounds of cloves, 93,732 pounds of nutmegs, and 46,730 pounds of mace, and about a third part more in private trade. In the year 1737, the Dutch East India Company sold at one time 280,964 pounds of nutmeg. In 1756, 241,427 pounds were sold; and in 1778, 264,189 pounds. The average has been considered to be about 250,000 pounds annually, which was sold in Europe at seventy-five livres per pound, exclusive of 100,000 pounds sold in the Indies. The average quantity of mace has been 90,000 pounds annually, and 10,000 in the East Indies.

“ The Dutch having possession of the Spice Islands in 1619, encouraged, to the utmost of their power, the cultivation of the nutmeg in a few of them, and were anxious, for the sake of the monopoly, to have them there so exclusively, that they either destroyed them themselves, in the remainder of the isles, or kept their princees in their pay for the purpose of doing so. In fact, they pursued the same line of policy with the nutmeg, as has been already described with regard to the elove, under that article (tab. 2749, 2759.) They have, more than once, suffered dearly for their insatiable avarice: for the dreadful hurricanes and earthquakes, which spared other islands, nearly annihilated the nutmegs of Banda in 1778; so that the Dutch were only able to have a few supplies for several years afterwards. While the Dutch remained undisputed possessors of the Spice Islands, the quantity of nutmegs and mace exported from their nutmeg-grounds, circumscribed as they were, was truly enormous. Stavorinus, in his valuable ‘Voyage to the East Indies,’ gives an excellent account of the commercial history of this spice. A quantity, estimated at no less than 250,000 pounds annually, used to be vended in Europe, and nearly half that amount in the East Indies. Of *mace*, the average has been 90,000 pounds sold in Europe, and 10,000 pounds in the East Indies. When the Spice Islands were taken by the British, in 1796, the importations of the East India Company into England alone, in the two years following the capture, were, of nutmegs,

129,732 pounds, and of mace, 286,000 pounds. When the crops of spice have been superabundant, and the price likely, in consequence, to be reduced, the same contracted spirit has actuated the Dutch to *destroy* immense quantities of the fruit, rather than suffer the markets to be lowered. A Hollander, who had returned from the Spice Islands, informed Sir William Temple, that, at one time, he saw three piles of nutmegs burnt, each of which was more than a church of ordinary dimensions could hold. In 1760, M. Beaumaré witnessed, at Amsterdam, near the Admiralty, the destruction by fire of a mass of spice, which was valued at one million of livres, and an equal quantity was condemned to be burnt on the day following: and Mr. Wilcocks, the translator of Stavorinus's Travels, relates, that he himself beheld such a conflagration of cloves, nutmegs, and cinnamon, upon the little island of Newland, near Middleburgh, in Zealand, as perfumed the air with their aromatic scent for many miles round.

“ M. Poivre has the honour of introducing this valuable plant into the isles of France and Bourbon, in 1772, together with the clove; thence, by the liberal policy of the French, it was sent to Guiana and to the West-India Islands.

“ In 1796 the British took possession of the Molucca Isles, and two years afterwards planted the nutmeg at Bencoolen, in Sumatra, where it is grown in the greatest luxuriance; so that in five years, the trees had arrived from ten to fourteen feet in height, and in October and November 1802, two hundred and forty seven trees, out of about six hundred, blossomed. About half of these were male and the rest female. A second importation was made to that island by the assistance of the Bengal government; and the son of Dr. Roxburgh arrived there with twenty-two thousand nutmeg plants from Amboyna, which, in a few years, yielded 200,000 pounds weight of nutmegs, and 50,000 pounds of mace.

“ In the Moluccas, the Dutch appear to have been totally ignorant of the diœious nature of the trees, and of the cause of sterility in so many of them. Where the trees are very abundant, this is a matter of comparatively trifling importance: but in colonies where but few plants have been introduced, it is not only of essential consequence that the female flowers should be fertilized by the male, but that the male plants should be employed in the most economical manner. This has been achieved by M. Joseph Hubert, in the Isle of France, in the most successful manner. Ascertaining that one male plant is sufficient for a hundred females, he resolved upon grafting the seedling stock of all his plantations in that proportion, in the second year of their growth: by this means there are no superfluous trees, and they come into bearing the sooner. According to the old method, the trees did not bear flowers till the seventh or eighth year; and it was not till that period, that the useless trees could be removed.

“ In our West-Indian colonies, the nutmeg was introduced about thirty years ago; and first, to the island of St. Vincent, from Cayenne, though not without great difficulty, on account of the extreme jealousy of the inhabitants of that colony, the two countries being then at war with each other. The three trees which were originally imported, have borne fruit for many years, and have attained the height of

twenty feet, with a trunk eight or nine inches in diameter. It does not, however, appear that the culture of the nutmeg succeeds so well in the West, as in the East Indies. Mr. Lockhart, who has the charge of the plants introduced into the island of Trinidad, by his excellency Sir Ralph Woodford, observes, in a letter to me, that the plants flourish best in the rainy season; even when moderate showers fall requiring constantly artificial watering; although a soil saturated with moisture is injurious. For a long time, though the trees introduced into St. Vincent produced abundance of flowers, they bore small crops of fruit, until Mr. Guilding recommended the same process as is employed with the caprification of the fig, when the crops were much more productive, two trees at one period bearing three hundred ripe fruits. The process of grafting adopted in the Mauritius might be employed, perhaps, to still greater advantage. Female flowers, which had reached perfection on the 20th of June, became ripe fruit from the 6th to the 12th of February following; this is the case, at least, in the island of St. Vincent, according to Mr. Guilding, who further observes, that the trees are almost always in flower; that fruit is most abundant in April, May, and June; and that the seed vegetates at the expiration of six weeks from the period of its being put in the ground.

“In the East Indies, as I have already observed, the trees are almost *always* loaded with flowers and fruit. In the Moluccas, the gathering of the fruit takes place at three periods of the year; in July and August, when the nutmegs are most abundant, but the mace is thinner than in the smaller fruits, which are gathered during November, the second time of collecting: the third harvest takes place in the month of March, or beginning of April, when the nuts, as well as the mace, are in the greatest perfection, their number being then not so great, and the season being dry. The outer pulpy coat is removed, and afterwards the *mace*, with a knife. The *nuts* are placed over a slow fire, when the shell becomes very brittle, and the *seeds* or *nutmegs* drop out: these are then soaked in sea-water, and impregnated with lime, a process which answers the double purpose of securing the seeds from the attack of insects and of destroying their vegetating property. It further prevents the volatilization of the aroma. The mace is simply dried in the sun, and then sprinkled with salt water, after which it is fit for exportation.”*

QUALITIES AND CHEMICAL PROPERTIES.—Nutmegs should be chosen large, of the shape of an olive, *heavy*, and firm, of a lightish grey colour on the outside, beautifully striated, and reddish within; of a strong fragrant odour, warm aromatic taste, and of an unctuous feel. The oblong kind, and the smaller ones should be rejected. Distilled with water, they yield a large quantity of essential oil, resembling the spice itself in flavour; after the distillation, an insipid sebaceous matter is found

* Curtis' Boatsn. Mag. N. S. vol. i.

swimming on the water; the decoction inspissated, gives an extract of an unctuous, very slightly bitterish taste, with little or no astringency. Rectified spirit extracts the whole virtue of nutmegs by infusion, and elevates very little of it in distillation; hence the spirituous extract possesses the flavour of the spice in an eminent degree. From an analysis by Neumann, it appears that the components of nutmegs are starch, gum, volatile oil, wax, and a fixed fat oil. The volatile oil, in which the active properties of the nutmeg chiefly reside, is of a pale-straw colour, limpid, transparent, and lighter than water. The expressed oil, erroneously called oil of mace, when first drawn, is limpid and yellow, but on cooling, acquires the consistence of spermaceti, and somewhat the appearance of Castile soap, being whitish, mottled with reddish brown. Its odour is agreeable, and slightly aromatic, and its taste fatty, pungent, and bitterish. It appears to be a vegetable cerate, consisting of fixed oil, volatile oil, and wax. "Nutmegs are frequently punctured and boiled in order to obtain the essential oil, and the orifices afterwards closed with powdered sassafrass."

OIL OF NUTMEGS is expressed from imperfect nutmegs, and such as are unfit for the European market: there are three sorts of it, commonly called *oil of mace*. The best is brought in stone jars; softish, of a yellow colour, an agreeable fragrant smell, greatly resembling that of the nutmeg. This is denominated Banda soap, and should be chosen free from impurities, and of a good colour. The next comes from Holland, in solid masses, generally flat, and of a square figure; paler coloured, weaker in smell, and inferior in its quality to that of India. The last is the worst, and seems to be a composition of suet, palm oil, or some such matter, flavoured with a little genuine oil.

MACE is a thin, flat, membranaceous substance enveloping the nutmeg; of a lively reddish brown or saffron colour, of a pleasant aromatic smell, and a warm, bitterish pungent taste. Mace should be chosen fresh, tough, oleaginous, of an extremely pungent smell, of a bright reddish yellow, the brighter the better; the smaller pieces are esteemed the best. The state it is in when packed, should be particularly attended to; if it be too

dry, it will be broken, and lose much of its fragrance; if too moist, it is subject to decay and breed worms. It should be packed in bales, pressed down close and firm, whereby its fragrance and consistence will be preserved.

MEDICAL PROPERTIES AND USES.—Nutmegs, which are universally known as a kind of delicate spice, are chiefly employed in medicine to impart their grateful aromatic flavour, and to obviate the irritating effects of drastic purgatives. They are supposed to be cordial, carminative, anodyne, and astringent; and with a view to the last-mentioned effects, they have been used in diarrhœa and dysentery. Given in large quantities, the nutmeg produces stupor, drowsiness, and other symptoms of narcotic poisons, in consequence of which Cullen warns us not to administer it to patients disposed to apoplexy. Bontius also speaks of their anodyne effects as a frequent occurrence in India. The *volatile oil*, possessing the taste and odour of the fruit in a concentrated degree, is occasionally used as an external stimulant; and the *expressed oil*, improperly called oil of mace, is generally prescribed in the same manner.

DOSE.—The dose of the nutmeg (which is sometimes employed to relieve nausea and vomiting, or to check diarrhœa, when given in wine) is from four grains to a scruple: of the *volatile oil*, from two to eight drops.

MACE is also chiefly used for culinary purposes; but, according to Dr. Ainslie, “is a favourite medicine with the Hindoo doctors, who prescribe it in the low stages of fever, in consumptive complaints, and humoral asthma; and also, when mixed with aromatics, in wasting and long-continued bowel complaints, in doses of from eight to twelve grains, and sometimes to as much as half a drachm; but they generally administer it cautiously, from having ascertained that an overdose is apt to produce dangerous stupor and intoxication.

TINCTURA NUCIS MOSCHATÆ.

R. Nucis Moschatæ contriti, ʒiii.

Spirit. vini. ten. lbij. M.

OFF. PREP.—Spiritus Myristicæ. L. E.

Spiritus Lavandulæ compositus. L. E. D.

Mistura Ferri compositæ. L.



Solidago virginica

SOLIDAGO VIRGAUREA.

Common Golden-rod.

Class XIX. SYNGENESIA. Order II. POLYG. SUPER-
FLUA.

Nat. Ord. COMPOSITÆ, γ, DISCOIDÆ, Lin.

CORYMBIFERÆ, Juss.

GEN. CHAR. *Receptacle* naked. *Down* simple. *Calyx* imbricated, with close scales. *Florets* of the radius about five.

SPEC. CHAR. *Stem* slightly zigzag, angular. *Clusters* downy, paniced, crouded, erect. *Upper leaves* lanceolate, narrow at both ends; lower elliptico-lanceolate, hairy, partly serrated.

Syn.—*Virga aurea*, Raii Syn. 176; Ger. Em. 430. f; Park. 542; Camer. Epit. 748.

749. f, f; Matth. Valgr. v. 2. 354. f. Dod. Pempt. 142. f.

Virga aurea vulgaris latifolia, Bauh. Hist. v. 2. 1062. f.

Solidago n. 69. Hall. Hist. v. 1. 29.

Solidago vulgaris, Gray Nat. Arrang. of Brit. Pl. v. 2. p. 465.

Solidago Virgaurea, Lin. Sp. Pl. 1235; Willd. v. 3. 2065; Fl. Brit. 889;

Eng. Bot. v. 5. t. 301; Hook. Scot. 244. Stokes, v. 4. 219.

FOREIGN.—*La verge d'or*; *Verge dorée*, Fr.; *Verga d'oro*, It.; *Vara de oro*, Sp.;

Vara d'oiro, Port.; *Die Goldruthe*; *St. Peterstab*; *Gülden Wundkraut*, Ger.;

Gulbris, Swed.; *Solotoschnik*, Rus.

ONE species only of the genus *Solidago*, subject to many varieties, is found in this country. The Golden-rods are almost entirely North American; they are all perennial, mostly herbaceous, with simple undivided leaves, generally bearing small yellow flowers, in long slender spikes or panicles, whence the names of *Virgaurea* and golden-rod. Few of the species were known to Linneus, but the Hortus Kewensis, enriched from Dr. Solander's manu-

script, has thrown great light on the present genus. Linneus, in *Systema Vegetabilium*, ed. 14, has only fourteen species of *Solidago*. Willdenow, profiting by Mr. Aiton's work, enumerates forty. Mr. Pursh reckons up fifty-one North American species alone, and Sir J. E. Smith describes in all fifty-one.

The *Solidago Virgaurea* inhabits woods, copses, grassy lanes, and is found among furze on heaths in mountainous situations, throughout Europe as well as at *Labrador*, and even China, flowering from July to September. Our drawing was made from a specimen growing on Hampstead Heath,* and we perceived it in most of the woods about London.

* This delightful spot has long been celebrated for the great variety of native plants which it produces. It is, therefore, presumed that the following catalogue of the rarer and more useful vegetables which grow spontaneously on the Heath, and in the meadows, woods, and ponds in its vicinity, may not prove unacceptable to the young botanist and medical student:—

Veronica officinalis. Among furze on the Heath.

——— *Chamædrys*. On the Heath.

Tormentilla officinalis. *Id*.

Geum urbanum. In woods and hedges, common.

Veronica Beccabunga. In ditches on the Heath.

Pyrus torminalis. Bishop's and Ken Woods. *Martyn*. In hedges behind Primrose hill.

——— *Aria*. Bishop's Wood.—*Martyn*.

——— *domestica*. Ken Wood.

Rosa tomentosa. Plentiful about London.—*Curtis*.

Ornithopus perpusillus. In sandy places on the Heath.

Hypericum androsænum. Hampstead Heath.—*Martyn*. Between Highgate and Muswell Hill.—*Blackstone*.

——— *pulchrum*. On the Heath, in Ken Wood, and other places.

Malva rotundifolia. Road-sides, common.

——— *moschata*. Field between Turner's Wood and North End; Ken Wood.—*Hunter*.

Gnaphalium rectum. On Hampstead Heath.—*Martyn*.

Carex pendula. Moist woods and hedges between Hampstead and Highgate.

Salix Russelliana. Osier grounds at Newington.—*Mr. J. Woods, jun.*

Menyanthes trifoliata. Larger bog on the Heath.

Chenopodium vulvaria. At the foot of a garden-wall, on the left-hand side of the road leading from London to Hampstead.

Alyssum sativum. At Highgate.—*Mr. J. Woods, jun.*

Prenanthes muralis. On a garden-wall, near the Spaniard, on Hampstead Heath.

Valeriana dioica. Ken Wood.

Agrostis capillaris. Between North End and Hampstead, also on the Heath.—*Milne*.

Stipa pennata. Said to be found in this neighbourhood by Mr. Hunter, Lord Mansfield's steward at Ken Wood House.

Empetrum nigrum.—*Id*.

Sanguisorba officinalis.—*Id*.

Tamus communis. Hedges in the lanes between the Heath and West End.

Bryonia dioica.—*Id*.

Lysimachia vulgaris. In a field near North End.

——— *nummularia*. In a moist ditch in Kentish-town fields.

——— *tenella*. Bogs, and in Ken Wood.

Ruscus aculeatus. Lane near West End.

Galeopsis Ludanum. Hedges.

Bartsia Odontites. By the side of the Great North Road.

The root is woody, somewhat curved, and furnished with long simple fibres. The stem generally rises from one to three feet

Trifolium Melilot.—*Id.*

Euphorbia amygdaloides. In all the woods in this district, common.

Veronica Beccabunga. A useless officinal, in ditches, common.

Digitalis purpurea. In the woods, but in no great plenty.

Lactuca virosa. In Maiden-lane, between London and Highgate.

Helleborus viridis. In a small wood near Finchley.—*Mr. J. Rayer.*

Arabis thaliana. In the hedge on the west side of Bishop's Wood.

Spergula arvensis. Sandy places, on the Heath.

Plantago coronopus.—*Id.*

Spartium scoparium. On the Heath, in great abundance.

Erythraea centaurium. West side of the Heath, and near the Vale of Health. *Mr. Bliss.*

Viola palustris. Near the bogs, west side of the Heath.—*Id.*

Vinca major. Under the hedge in Bellsizes lane.—*Id.*

Hydrocotyle vulgaris. In moist places on the Heath.

Drosera rotundifolia. Great bog, plentifully.

Sison anomum. By the side of the road leading from London to Hampstead.

Myosurus minimus. Ken Wood.

Convallaria maialis. On a ditch-bank to the north of the old target-bank, and also in Turner's Wood.—*Bliss.* In Bishop's Wood.—*Gough.* On the Heath plentifully in the days of Gerard.

————— *verticillata.* Ken Wood.—*Hunter.*

————— *Polygonatum.* Ken Wood.—*Id.*

Staphylea pinnata. Ken Wood.—*Id.*

Polygonum Bistorta. Meadow between Bishop's Wood and Finchley. Ken Wood.

Vaccinium Myrtillus. Ken Wood, and several parts of the Heath.

Epilobium angustifolium. Hedge-bank in Lord Mansfield's premises.

Paris quadrifolia. Ken Wood.—*Hunter.*

Butomus umbellatus. Ken Wood.—*Id.*

Sedum Telephium.—*Id.*

Rubus Idæus. Ken Wood.

Helleborus viridis. Ken Wood.—*Hunter.*

Scutellaria minor. Abundant on the east side of the Heath.

Orobanche major. Ken Wood.—*Hunter.*

Lathyrus Nissolia. Ken Wood.—*Id.*

Polemonium cæruleum. Hampstead Heath, sparingly.—*Milne.*

Chrysosplenium oppositifolium. In a shady ditch that runs across Ken or Bishop's Wood.

Montia fontana. Moist places on Hampstead Heath.

Ononis arvensis. On the Heath, common.

Peplis Portula. In ponds on the Heath.

Anthemis nobilis. On the east side of the Heath, by the side of the road.

Nuphar lutea. Ken Wood, ponds.—*Hunter.*

Potentilla Fragariastrum. On dry banks about Bishop's Wood.

Acorus Calamus. By the side of the great pond or reservoir in Lord Mansfield's park, plentifully.

Pimpinella minor. At North End, on a bank.—*Milne.*

Ranunculus hederaceus. By the sides of ponds.

Ægopodium podagraria. In Southwell Lane, on the side of the road leading from Highgate to Muswell Hill.

Dianthus deltoides. Hampstead Heath.—*Martyn.*

Rumex sanguineus. Woods about Hampstead.—*Merret.*

Tulipa sylvestris. Top of Muswell Hill.—*Mr. J. Woods, jun.*

Iris fetidissima. Kentish Town and Muswell Hill.—*Martyn.*

Viburnum Opulus. In the woods, common.

Orobanche major. Ken Wood.—*Hunter.*

Equisetum sylvaticum. Meadow on the north side of Hampstead Heath.—*Mr. J. Woods, jun.*

Asplenium Trichomanes. On old walls.—*Mr. Wheeler.*

high; it is erect, leafy, slightly zigzag, never quite straight, angular, solid, and downy, giving off several short branches towards the top. The leaves are of a dull green colour above, paler underneath; the lower ones stalked, elliptic-oblong, pointed, more or less serrated, rarely altogether entire, very rough, and clothed with a rigid down; the stem leaves smaller, and gradually diminishing to lanceolate bractes, more entire, nearly sessile, alternate, and downy like the flower-stalks. The flowers are of a bright yellow colour, in terminal and axillary clusters, forming a dense leafy panicle, which varies exceedingly in magnitude, and in the number and size of the flowers, in elevated situations being shorter, more dense, and less compound. The scales of the calyx are erect, lanceolate, downy, membranous at the edges, and finely fringed. The florets of the disc are numerous, tubular, with five equal segments; those of the radius from six to ten, elliptic-oblong, 3-toothed, spreading; in decay becoming revolute and tawny. The filaments are capillary, short; and the anthers united into a cylindrical tube. The seeds are ovate, minutely hairy; the down appearing rough when viewed with a magnifier. The receptacle is naked, punctured

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- Aspidium Filix mas.* On old hedge-banks, common.
 ——— *aculeatum.* Ken Wood.
 ——— *cristatum.*—*Id.*
 ——— *Oreopteris.* On the edge of Hampstead Heath.—*Mr. J. Rayer.*
Polypodium vulgare. Hedges near Childs Hill.
Scolopendrium vulgare. On the west side of Hampstead Heath.
Lycopodium inundatum. Hampstead Heath.—*Ray.*
Phascum axillare. North side of Muswell Hill.—*Dickson.*
Dicranum cerviculatum. Dry turfy parts of Hampstead Heath.—*Id.*
Hypnum undulatum. Bishop's Wood.—*Buddle.*
 ——— *stramineum.* Bog on the west side of the Heath.—*Dickson.*
 ——— *crispum.* On the Heath.
 ——— *palustre.*
 ——— *cuspidatum.*
 ——— *gracile.*
Bryum hypnoides.
 ——— *aureum.*
Jungermannia reptans. Shady places.—*Martyn.*
 ——— *pusilla.* Bishop's Wood.—*Id.*
 ——— *ciliaris.* In a rivulet running through a little wood called Old Fall, between Highgate and Muswell Hill.—*Dillenius.*
 ——— *bidentata.*
 ——— *undulata.*
 ——— *albicans.*
 ——— *tamariscifolia.*
 ——— *epiphylla.*
 ——— *bicuspidata.*

slightly cellular, and toothed at the margin.—Fig. (a) floret of the disc; (b) floret of the radius; (c) the common calyx; (d) the receptacle.

QUALITIES.—When bruised, the whole herb has a slightly aromatic smell, and a weak astringent taste. Its active matter is extracted by boiling water, and by alcohol; both solutions strike a black colour with the sulphate of iron, and from their slight astringency they probably contain a small portion of tannin.

MEDICAL PROPERTIES AND USES.—This plant is astringent and tonic. It has been much commended by the ancient writers as a remedy against stone in the bladder, in urinary obstructions, cistorrhœa, and ulcerations of the urinary organs. From its astringent powers, it may be employed with advantage in diarrhœa; and in calculus, in common with other remedies of this class, may occasionally prove beneficial; but it is seldom used in modern practice, either in this country or on the continent. It has been recommended also as a styptic both externally and internally; and from its reputed vulnerary qualities, it is called in some places *woundwort*, which is also a name given to many other plants. Gerarde says, “It is extolled above all other herbes for the stopping of blood in sanguinolent ulcers, and bleeding wounds; and hath in times past been had in greater estimation and regard than in these dayes; for in my remembrance, I have known the dry herbe which came from beyond the sea sold in Bucklers Bury in London (the Covent Garden of these times) for half a crowne an ounce. But since it was found in Hampstead Wood, euen as it were at our own townes end, no man will giue half a crowne for an hundred weight of it; which plainly setteth forth our inconstancie and sudden mutabilitie, esteeming no longer of any thing, how precious soever it be, than whilst it is strange and rare.” Its dose may be from grs. x. to ʒj, or more, twice or thrice a day.

SOLIDAGO ODORA.—*Sweet-scented Golden-rod.*

SPEC. CHAR. *Stem* nearly smooth. *Leaves* linear-lanceolate, entire, smooth, with a rough margin, and covered with pellucid dots. *Racemes* panicled, one sided.

Syn.—*Virga aurea Americana*, tarraconis facie, et sapore, panicula speciosissima,
Pluk. Phytol. t. 116. f. 6.

Solidago odora, *Ait. Hort. Kew*, ed. 2. n. 15; *Willd. n. 22*; *Pursh. n. 24.*

THIS plant is a native of America, growing in dry sunny situations, on fertile woodlands, from Canada to Carolina, principally throughout the Allegany mountains, flowering from August to October. The leaves have a delightful fragrant odour, partaking of anise and sassafras, but different from either. It yields on distillation a volatile oil, possessing the taste and aroma of the plant in a high degree. This oil appears to reside in the transparent cells, which constitute the dotting of the leaves, the root being wholly destitute of the fragrance of the herb.

This species of *Solidago* is said by Professor Bigelow to be a pleasant aromatic, stimulant, diaphoretic, and carminative. An essence made by dissolving the essential oil in proof spirit is used as a remedy for complaints attended with flatulency, and as a vehicle for unpleasant medicines of various kinds. It allays vomiting and spasmodic pains in the stomach, and from its pleasant flavour, covers the taste of laudanum, castor oil, and other medicines which the stomach frequently rejects.

Mr. Pursh states that the plant is dried in some parts of the United States as an agreeable substitute for tea; and that it has for some time been an article of exportation to China, where it fetches a high price.



Alstonia Cardanum

MATONIA CARDAMOMUM.

The Lesser or Malabar Cardamom.

Class I. MONANDRIA.—Order I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, Lin. CANNÆ, Juss.

GEN. CHAR. *Capsule* 3-celled and 3-valved, with a central receptacle. *Anther* of two distinct lobes. *Filament* with two triangular lobes at the base, emarginate and simple at the summit. Outer limb of the *corolla* in three oblong lobes; outer a single lip. *Seeds* rough, tunicated.

SPEC. CHAR. *Leaves* elliptic-lanceolate, acute. *Calyx* notched. *Capsule* ovate-oblong, obtusely triangular.

Syn.—Cardamomum simpliciter in officinis dictum Cardamomum verum, Angl.

Bauh. Pin. p. 414.

Cardamomum cum siliquis sive thecis brevibus, Bauh. Hist. Plant. v. 2. lib. 15. p. 205.

Elletari, Van Rheede Hort. Malab. v. 2. p. 9. t. 4. 5.

Cardamomum minus, Clusii de Aromat. lib. 1. c. 24. p. 187; Matthiol. sur Diosc. (Pinet) p. 6; Bodæi Annot. in Theophrast. p. 1014. f.

Cardamomum Ensai dictum, Burman Thes. Zeyl. p. 54.

Amomum Cardamomum, White Trans. of Lin. Soc. v. x. 230. t. 4. 5.

Amomum repens, Sonner. Voy. tom. 2. p. 240. t. 136; Roscoe in Trans. Lin. Soc. v. 8. p. 353.

Cardamomum minus, Matth. Valgr. v. 1. 25; Camer. Epit. 11. f. 3; Ger. Em. 1542; Geoffr. Mat. Med. p. 368; Lin. Mat. Med. p. 2.

FOREIGN.—Petit Cardamome, Fr.; Amomo minore, It.; Cardamomo, Sp. and Port.; Kleine Kardamomen, Ger.; Kadamome, Dan.; Kardamome, Rus.; Kdkula, Arab.; Purbi and Guzrate Clachi, Hind.; Capulaga, Malay.

THE Malabar Cardamom has been regarded by most botanical writers as a species of Amomum; but Mr. Roscoe has shown that it differs in the filament or antheriferous petal not being produced beyond the anther, as in that genus. Dr. Roxburgh, in his account of the plants of Coromandel, considers it to be an

Alpinea; but in this the inflorescence is terminal, whereas in the Cardamom it issues horizontally from the tuberos annulated part of the stem: hence it has lately been removed to a new genus, called *ELETTARIA*, from *Elettari*, the original Malabar appellation, as given in the Hortus Malabaricus. The name *MATONIA*, by which it is now distinguished, was, we believe, originally suggested by Sir James Edward Smith, in honour of his friend Dr. Maton, the learned physician and naturalist, who first clearly established the genus.

We have great pleasure in presenting to the public a correct representation of the plant which yields Cardamom seeds. The botanical description and natural history were first communicated to the Directors of the East India Company, by Mr. David White, surgeon on the Bombay establishment; and it is to his paper, together with the valuable remarks of Dr. Maton, published in the tenth volume of the Transactions of the Linnean Society, that we are chiefly indebted for the account we now write.

The plant which produces the Cardamom seeds, (*Matonia Cardamomum*), is a native of the mountainous parts of Malabar, on lofty hills, whose summits are ever clothed with clouds, growing most luxuriantly in shady places, in a moist atmosphere; flowering when the rainy season begins, in April and May, and ripening its seeds in October and November. The district of Wyniaúd, situated on the summit of the western Ghaûts, about the twelfth degree of latitude, produces the best Cardamoms in India.

The Lesser or Malabar Cardamom has a whitish perennial, annulated, tuberos root, sending off many long slender fibres. The cultivated plant does not flower till it is four years old. The stems, which emerge from the root, are tuberos, clubbed, and jointed at the base for two or three inches; the lower part giving out viviparous shoots, the upper part panicles. They are erect, and tapering as the continued sheaths send off the leaves; when bearing, from six to ten feet high, and from eight and twelve to thirty in number, smooth, with varying shades of glossy green and pale at the base; which distinguishes this species from a congener frequent on the same scite, but with a red or fuscous base. The leaves are alternate and sheathing, elliptic-lanceolate,

pointed, from nine inches to two feet and a half long, and from one to five inches broad, spreading, dark green, smooth, entire pale sea-green beneath, and glossy, with a silky softness. The midrib of the leaf on the upper surface is channelled, on the under keeled. The flowers are in panicles, which issue laterally from the tuberous jointed base of each stem near the root. The panicles are much branched, jointed, a span long, smooth, many-flowered, and spread horizontally on the ground. The bractees are alternate, ovate, oblong, acute, at the base of each partial stalk, withering; the partial ones solitary, tubular, closely embracing the germen and calyx, almost as long as the latter and resembling it in shape, but deciduous. The calyx is monophyllous, double, tubular, cylindrical, and 2 or 3-cleft at the margin. The corolla is monopetalous, and funnel-shaped; tube longer than the calyx, cylindrical, slender, curved; outer limb in three equal, oblong, recurved segments, inner a somewhat obovate, large, notched, crenate, undivided lip, with a short claw. The filament is stout, erect, with a lanceolate, acute, horizontal lobe, simply notched at the summit, without any crest or extension beyond the anther, which consists of two oblong, distant lobes, about half the length of the filament. The germen is inferior, nearly globular, having a slender thread-shaped style lying close to the filament between the lobes of the anther, and bearing a funnel-shaped, obtusely triangular stigma. The capsule is 3-celled, with three coriaceous valves; when fresh it is fleshy, smooth, elliptic-oblong, or somewhat ovate, but becoming bluntly triangular, coriaceous and pale brown, when dried. The seeds are numerous, roundish, somewhat angular, rough, each enveloped in a fine membranous evanescent tunic. The receptacle is central, shorter than the capsule, when dry, and originally connected with the central ridge of the valve. The plate represents a full-grown Cardamom plant, with its stems cut off.—Fig. (a) the partial panicle with its germs and flower viewed in front; (b) the back view of the corolla; (c) the tube only of the corolla, with the inner calyx, &c.; (d) the same without the calyx; (e) part of the style, stigma, and anthers in situ; (f and g) the naked pistilla, one with the germinal appendices a little separated, the

other with the same in situ; (*h*) a half-grown germen, with the persistent inner calyx and its 3-toothed border; (*i*) the naked pistil, style, and stigma; (*jj*) longitudinal and transverse sections of the full grown pericarp, as it is taken from the plant before drying; (*k*) two seeds, a little magnified; (*l*) the bare capsule, one side removed to show the triangular seed-receptacle; (*mm*) the Cardamom pod, as it comes to market from the drying process.

The glistening polish of its stems, (says Mr. White,) the sea green glossy surface of its leaves waving with the least impulse, and the general symmetry of the whole, easily distinguish it from its rival neighbours in the woods. It outshines them also in the elegance of its flowers: the vivid pink, surrounded by the pale white of the spreading division of the upper border of the corolla, presents a most delicate contrast.

In Malabar, its native soil, it is simply named *Ela*, or *Ela-tari*, and *Ela-channa*; the former addition signifying a young plant, the latter a full-grown one. The ripe pod is styled exclusively *Ela-tari*, *ari* in Malabar signifying any small grain: e. g. *ari*, rice, *mont-ari*, natcheny or raggee.

THE CARDAMOM FARMS.—“The spots chosen for these,” continues Mr. White, “called in the Malabar language *Ela-Kandy*, literally signifying Cardamom plots, are either level or gentle sloping surfaces on the highest range of the Ghâts, after passing the first declivity from their base. The extent of climate hitherto known in Malabar to produce them, lies between 11° and 12° 30' north latitude, or thereabouts.

“The months of February and March are, on account of the prevailing dry weather, selected as the most proper for commencing their labours, the first part of which consists in cutting down the large and small trees promiscuously, leaving of the former, standing at nearly equal distances, certain tall and stately individuals, adapted to that degree of perpendicular shade which experience teaches them to be most favourable for the future crops. The grass and weeds are then cleared away, and the ground disencumbered from the roots of the brushwood: the large trees lie where they fall; the shrubs, roots, and grass are filled up in different small heaps, and their spontaneous and gradual decomposition fertilizes the space they cover.

“The size of the *Ela-Kandy* is various. The largest Mr. White saw among fifty did not exceed sixty yards in diameter. Their form varies likewise, very commonly oblong or oval, sometimes a contour irregularly rounded. The variety in these respects is chiefly owing to the convenience of the standard or permanent trees for shade. Those

with lofty, straight stems, extensive heads, and those that are in an adolescent state, and known to be long-lived, are preferred for this purpose, and left standing at fifteen or twenty yards from each other. Much more diminutive plots are also cultivated by a race of Hill people called *Kourchara* and *Cadura*, who are not exactly slaves, but locally attached, and acknowledging certain obligations of a feudal, and perhaps reciprocal kind to the Nairs in the neighbourhood.

“ After the operations now described, no further labour is bestowed for four years. At the revolution of the fourth rainy season, and towards its close, they look for a crop, and their hopes are rarely disappointed; this first effort of nature is generally scanty; for instance, only one-half of what is reaped the following year, and only one-fourth of what is yielded after the sixth rains, at which period the plant has reached its acme of prolific vigour. Now and then, however, this routine is interrupted, and its progress protracted, by causes of which they are not very solicitous to investigate the nature; they remark, however, excessive and uninterrupted rains to be one source of failure.

“ In the dry season succeeding to the first crop, they grub up the undergrowth of shrubs, and clear away the weeds and grass, laying them up as before in heaps to rot; but in no case do they set fire to these, the consequence of which practice would be the certain failure of the crops. This process of cleansing being yearly repeated, the same spot will continue productive for fifty years and upwards.

“ The barren state of the *Ela-Kandy* is replaced by the establishment of another, on a fresh site, and with similar properties to the former; in the choice of which they can never be at a loss, from the great extent of mountain and wood in a state of nature, and, the same operations repeated, the customary routine of crops will follow.

“ As the Cardamom plants spring up from scattered seeds dormant on the spot, or washed thither by rains from the adjacent parts, we do not find any regularity in their disposition, nor is the industry of the natives ever exerted to correct this. Accordingly we see them variously grouped; in some places crowded and extremely luxuriant; in others thin and stunted; some roots sending forth from twenty to thirty stems, two-thirds or three-fourths of which bear, others from eight to twelve, and down to four or five. Hence it is difficult to calculate the rate of produce of any one plant. Each stem sends forth from its thickened base from two to four strings of fructiferous panicles; from these issue alternately short clusters bearing from two to three ripe pods. The length of the common string or stalk varies from four inches to eighteen, and is sometimes two feet; but these last extremes are not fertile in proportion. In good years, from four to six plants will yield of dried pods one *dungally*, a measure of capacity equal to four pints Winchester.

“ The abundance of crop, is best insured by a moderate routine of weather, with respect to dry and wet: the extremes of each are injurious; they dread most, however, deluging rains, particularly for the young plantations, and during the flowering season, which commences on the first fall of the rains in April and May, and continues for two months. The flower being very delicate, and the recumbent and

repent posture of the fruit-panicles, exposes them particularly to the bad effects of drenching moisture. Repeated torrents, descending from above, commit their devastation by baring the roots, and sweeping away the finest portion of the mould, which furnishes a nutriment so essential to the vigour of the plants. In August and September the pods increase and acquire the greatest size. In the first half of October they begin to ripen; then the gathering of the early part commences; the ripening proceeds through all that month and November. A longer continuance of the rainy season may protract the final gathering till the middle of December. About a fortnight earlier than here stated, the Cardamoms on the western or sea-side of the Ghâts are gathered. The process of reaping keeps pace with the simplicity of the previous management. A dry day being chosen, the fruit-stalks are plucked from the roots, carried to their houses, and laid out to dry on mats placed upon a threshing-floor; a series of four or five dry days is sufficient to complete the desiccation. The pods being extricated by stripping with the fingers, are separated into three or four sorts, denominated from their respective qualities:—1. *Talli-Kai*, the head fruit; 2. *Nadu-Kai*, the middle; and 3. *Poulo-Kai*, the abortive fruit. The last being thrown away, the two former are mixed together; the purpose of the separation being to ascertain the relative proportions, and to render the whole uniform and marketable. They are then laid up in mat-bags, made of the *Pandanus sylvestris* of Rumphius, a plant growing every where around their houses and fields. These bags are of two sizes, one holding thirty-two pounds avoirdupois, or a company's *maund* in Malabar, and the other sixteen pounds.

“The bundles thus prepared by the cultivator are immediately carried down to shops, or little storehouses, erected by Mopla merchants or agents in different places along the whole range of hills, and at a little distance from the farms. Here they are subjected to another and final operation by the venders to the wholesale merchants on the coast. This consists in holding them over a gentle and slow fire in flat baskets, while the assistants continue rubbing them betwixt their hands for a certain time; which has the effect of detaching what remains of the permanent calyx and foot-stalks, or other adhering membranes, and gives the pod that appearance and marketable quality delineated in pl. 106, figs. *m* and *n*. This operation is termed in Malabar, *Terimbous*, a word expressive of its nature. The Cardamoms are now weighed for the purpose of ascertaining the respective quotas of rent payable by the different farmers. The result of this is expected to correspond with a previous estimation of the quantity of the crops, taken on the ground before they arrive at maturity; on the approach of which an official deputation, consisting of public officers and some of the head men of the country, well acquainted with the subject, repairs to the Ela-Kandy's, attended by the proprietors, and there makes the calculation from the combined consideration of the extent of ground, age of the plantation, and general appearance of the fruit-stalks then in full bearing. Four or five of the visitors, whose interests are supposed to be neutral, and equally unbiassed betwixt Government and the Ryot, successively and seriously deliver their

opinions; from the average of which the official attendants strike a mean, and mutual satisfaction is generally the consequence. The duties, or customs, are paid only on exportation from the province; they amount to twelve per cent., and the average price is rated at 1200 rupees per candy of 640 pounds avoirdupois.

“The total produce of Wynaūd may amount, one year with another, to something above fifty candies, perhaps fifty-six; and this grows on an extent of more than 100 miles, reckoning the sinuosities and angles of the hills. The kingdom or country of the Coorja Rajah produces less than ten or fifteen candies. The whole site of the growth of this spice on the continent of Hindostan extends from the Soubramany Ghaūt, nearly due east from Maugalore, to Mannaar Ghaūt in the same direction from Calicut.”

Mr. White, to whom we are indebted for the preceding account of the natural history of this plant and its cultivation, under the name of *Amomum Cardamomum*, in Trans. of Lin. Soc. vol. x. speaks of the seed as amongst the most important articles of modern luxury, and as “a grateful and salubrious accessory of diet.” Its general use in Asia, indeed, renders the plant a very important and profitable object of culture, though the harvest, occurring at the most unhealthy season, is not unattended by serious dangers. Fevers, fluxes, the bite of innumerable minute leeches, (*Hirudo geometra*,) and the instantly fatal sting of the whip-snake, are mentioned as not uncommon mischiefs; to which is added the caustic quality of a shrubby plant, called by the natives *Mouricha*, whose botanical characters have not been ascertained, but whose leaves produce dangerous and sometimes fatal ulcers of the skin. The profit of the Cardamom farms, however, is so considerable as to overcome all difficulties in their cultivation, and Mr. White thinks they might easily be greatly extended.

What the cardamom of the ancients was, it is now scarcely possible to determine. It is extremely probable, however, as Dr. Maton justly observes, that the article bearing that name in their materia medica, was not the common cardamom of our shops. The plant producing it was not satisfactorily made known, until the publication of the *Hortus Malabaricus*, in which the delineation of it is sufficiently striking. From the mistake made by Burmann, in referring to Bontius's Java (p. 126) for the true cardamom, appears to have originated the erroneous description and discordant references, on the subject of the cardamom in the works of Linneus; the latter illustrious author having confounded the Javanese cardamom, *Amomum compactum* of Solander, with that of Malabar. In Java the plant grows wild in the woods, and is there called *kāpalūga*, but its produce is much inferior

to that of the Malabar cardamom. The *Amomum Cardamomum* (*Cardamomum minus* Rumph. Amb. 5. p. 152. t. 65. f. 1.) is the species, the seeds of which come the nearest in taste and virtues to the officinal article, and are said to be used as a substitute for them by the Malays. The plant is a native of Sumatra and other islands to the eastward of the bay of Bengal, and was sent, according to Dr. Roxburgh, (*Flora Indica*, p. 37,) to the botanical garden at Calcutta, where it blossoms in April.* Dr. Francis Hamilton, in his Account of the Kingdom of Nepal mentions a large fruited species of cardamom (*Amomum*?) which he found growing there, hitherto undescribed by botanists. The plant producing the greater cardamom seeds of commerce or Grains of Paradise, is the *Amomum Grana Paradisi*, of Linneus.

The officinal cardamoms are brought to this country from Bengal in cases, each containing about 120lbs weight. The seeds are dried and imported in their capsules, by which their flavour is better preserved.

QUALITIES.—These seeds have an extremely grateful aromatic odour, and a warm pungent taste. They communicate all their virtues to alcohol and ether, and nearly so to water. In distillation they afford an essential oil, which is pungent to the taste, and in this seems to reside all the active qualities. “The watery infusion has a turbid appearance, and lets fall a flocculent precipitate, on the addition of alcohol, the acids, solutions of sulphate of iron, muriate of mercury, and acetate of lead; but the sulphate of iron does not alter its colour. The alcoholic tincture is rendered milky by water. The ethereal has a yellowish green hue, and, when evaporated on the surface of water, leaves neither resin nor extractive, but a considerable portion of essential oil, which has the flavour and taste of the seeds in perfection. Cardamoms, therefore, seem to be entirely composed of fecula, mucus, and essential oil.”

MEDICAL PROPERTIES AND USES.—Cardamom seeds have been long employed in medicine as a valuable cordial, carminative, and stomachic. They afford a grateful warm aromatic, less heating and stimulant than many of the other spices, and are, perhaps, on this account better adapted for general use. They enter into several of the officinal preparations, and are frequently combined with bitters in dyspeptic cases, or with purgatives, to obviate flatulence and griping. In India these seeds are highly prized as an agreeable condiment, and their use as such is so universal, that they are now regarded as a necessary of life by most of the natives of Asia.

* “The true original *Amomum* of the shops, still to be met with at Venice, and in other parts of the south of Europe, is the *Amomum Cardamomum*, Cluster Cardamom, (*Lin. Sp. Pl.* 2; *Willd. n.* 1; *Roscoe n.* 1; *A. verum*, *Ger. Em.*) though generally supplanted by the more valuable lesser Cardamom, *Amomum repens* of Sonnerat, which Linneus confounded herewith.”—Smith in *Rees's Cyclopædia*.

There are two tinctures of cardamoms in the British pharmacopœias, viz. a simple and a compound tincture; the first named *Tinctura Cardamomi*, prepared by digesting for eight days, three ounces of the bruised seeds in two pints of proof spirit. It possesses all the virtues of the seeds, and may be given in doses of one drachm to three. The other named *Tinctura Cardamomi composita*, (formerly called *Tinctura stomachica*,) prepared by digesting for fourteen days two drachms of the cardamom seeds, two drachms of carraway seeds, two drachms of cochineal, half an ounce of cinnamon, and four ounces of stoned raisins, in two pints of proof spirit. It would be an improvement in this preparation, as Dr. R. Pearson justly observes, if the proportion of cardamom seeds were increased, if the cochineal were omitted, and if, instead of four ounces of raisins, one ounce of pulverized sugar-candy were to be added, after the digestion is over. The usual dose is from two drachms to half an ounce or more. Both these tinctures are often ordered in stomachic infusions, and joined with ether, opium, and other antispasmodics, in flatulent colic, and in gouty, and spasmodic affections of the stomach. “Among all the aromatics,” says Dr. Parr, “there are none that answer so well, in general as this simple tincture, for rendering mineral waters and other saline solutions easy and agreeable to the stomach.”

Dose.—The dose in powder is from grs. v to ℥i.

AMOMUM GRANA PARADISI.—*Grains of Paradise Amomum.*

GEN. CHAR. *Anther* of two distinct lobes, attached by the back, below the summit. *Filament* with a 3-lobed crest, above the anther. *Capsule* 3-celled. *Seeds* tunicated.

SPEC. CHAR. *Stalk* simple. *Bractææ* numerous, closely

imbricated. *Leaves* crowded, ovate-lanceolate. *Capsule* oblong, bluntly triangular, minutely hispid.

Syn.—Grana Paradisi officinale, *Bauh. Pin.* 413; *Dale Pharmac.* 277.

Amomum Grana Paradisi, *Lin. Sp. Pl.* 2; *Art.* 3; *Berg. Mat. Med.* v. 1. 3.

THIS species of *Amomum*, the fruit of which is well known under the name of Grains of Paradise, or Mellegetta Pepper, is a native of Guinea, about Sierra Leone, from whence the seeds were brought very soon after the discovery of that country by European navigators. The root is perennial, creeping horizontally. Stems erect, simple, slender, three feet high, leafy, but destitute of flowers. Leaves numerous, crowded, alternate, a span long, entire, smooth, lanceolate or slightly ovate, with a long taper point. Footstalks sheathing, linear, very long, smooth, and striated. Flowerstalks radical, solitary, an inch or two in length, ascending, clothed with numerous close sheathing bracteas; the lower ones very short; the upper gradually much larger. Of the parts of the flower we have no satisfactory account. Capsules an inch and a half long, oblong, bluntly triangular, rough, with minute hairs. Seeds numerous, roundish, of a shining golden brown colour.

The old authors confounded this species with the *Cardamomum majus*, figured in Camerarius's *Epitome* 11. f. 1, which is the *Amomum augustifolium* of Sonnerat, *Voyage aux Indes*, v. 2. 242, found in marshy ground in Madagascar. The habit of this plant is not very unlike what we have described, but the capsule is ovate, flattened on one side, and nearly twice the size of the above; and the seeds have none of that extremely hot acrid taste for which the Grains of Paradise are remarkable.

USES.—These seeds are much less aromatic and grateful than the lesser cardamom seeds; and the taste is extremely hot and acrid, approaching in this respect to pepper, with which they agree also in their medicinal properties.



Curcuma Zedoaria.

CURCUMA ZEDOARIA.

Zedoary.

Class I. MONANDRIA.—Order I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, Lin. Roscoe. CANNÆ, Juss.

GEN. CHAR. *Anther* double, embracing the style, 2-spurred. *Filament* petal-like, central lobe bearing the anther. *Capsule* 3-celled. *Seeds* numerous.

SPEC. CHAR. *Leaves* broad-lanceolate, smooth, with a purple cloud down the middle. *Spikes* lateral. *Bracteas* emarginate.

Syn.—Kua Rheede Hort. Malab. v. 11. t. 7.

Zerumb. Rumph. Amb. v. 5. t. 6.

Amomum Zerumbet, König in Retz. Obs. 3. 55.

Curcuma Zerumbet. Roxb. in Asiat. Res. v. 11. 333. & Flor. Ind. p. 20.

Curcuma Zedoaria, Bot. Mag. v. 37. t. 1546.

Amomum Zedoaria, Sp. Pl. Willd. v. 1. 7.

FOREIGN.—Zedoire, Fr.; Zedoaria, It.; Zedoar wurzel, Ger.; Catchu, Cachura, Cachoramu, &c. of the Hind. and Teling.; Sat'hi or Sote, Beng.

THIS plant is a perennial, growing in sandy open places in various parts of India, particularly in Ceylon and Malabar; flowering during the hot season. The root is tuberous, oblong, about the thickness of a man's thumb, fleshy, aromatic, and of a pale straw colour. The leaves are radical, as it is only the sheaths that create the appearance of a short stem; they are broad lanceolate, inequilateral, smooth on both sides, of a green colour, with a ferruginous or purple cloud down the middle on the upper and a fainter cloud in each side of the mid-rib below. They are bifarious and herbaceous, making their appearance with the first

is very hard, and somewhat resembles ginger in figure and size. It should be chosen large, fresh, resinous, hard to break, and heavy.

QUALITIES AND CHEMICAL PROPERTIES.—Turmeric has a slightly aromatic odour, and a bitterish somewhat acrid taste. It readily gives out its active matter, both to aqueous and spirituous menstrea, communicating to the former a deep yellow, and to the latter a fine yellowish-red tint. Distilled with water it yields a small quantity of a gold-coloured essential oil. The alcoholic extract is moderately warm, nauseous, and bitter.

MEDICAL PROPERTIES AND USES.—The medical virtues of turmeric are those of a slight stimulant and tonic. In Eastern countries this root, besides its use in colouring food, is considered as cordial and stomachic, and is accounted one of the most effectual remedies in dysenteric obstructions, uterine disorders, and affections of the kidneys and urinary passages. It is a constant ingredient in curries,* and is prescribed by the Tamool doctors, in those watery diarrhœas which are so troublesome and difficult to subdue in weak habits. Although the use of this root has been celebrated formerly as a powerful remedy in dropsies, intermittent fevers, and as a specific in the jaundice, it is now very rarely prescribed. It tinges the urine of a deep yellow, after being taken for a short time. The *dose* in substance is from ʒss to ʒij : in infusion, made with ʒss of the root in a pint of water, two or three table-spoonsful, three times a day.

* CURRY POWDER.—The following receipt for curry powder is taken from the "Cook's Oracle." The ingredients are the same as those used in India, with this difference only, that some of them are in a raw green state, and are mashed together and afterwards dried and powdered;—Turmeric, three ounces. Coriander seed, three ounces. Black pepper, mustard, and ginger, one ounce of each. Lesser cardamoms, half an ounce. Cayenne pepper, cummin seed, a quarter of an ounce of each. Thoroughly pound and mix together, and keep them in a well-stopped bottle.



Helminthoceras

vesiculosus

FUCUS VESICULOSUS.

Bladder Fucus. Bladder-wrack.

Class XXIV. CRYPTOGAMIA. Order III. ALGÆ.

Nat. Ord. ALGÆ.

Ess. CHAR. *Seeds* produced in clustered tubercles, which burst at their summits.SPEC. CHAR. *Frond* coriaceous, flat, linear, dichotomous, entire, with a central rib; vesicles innate in pairs, receptacles distinct, terminal, turgid, mostly elliptical.*Syn.*—*Fucus* sive *Alga marina latifolia vulgatissima*, *Raii Syn.* p. 40. n. 4.*Alga* sive *fucus*, *Quercus marina dictus*, *Baster, Op. Subs.* 2. p. 4. 116. t. 11. f. 2.*Quercus Marina*, *Gmel. Hist. Fuc.* p. 60.*Fucus vesiculosus*, *Lin. Sp. Pl.* v. 2. p. 1626; *Eng. Bot.* v. 15. t. 1066;*Wither. Bot. Arr.* v. 4. p. 84; *Esper Icon. Fuc.* 1. p. 33. t. 12; *Fl. Fr.**ed. 2da*, 2. p. 18; *Turner Hist. Fuc.* v. 2. p. 44. t. 88; *Hook. Scot.* p. 95.*β. spiralis*; frond twisted in a spiral manner, vesicles none, receptacles roundish.*F. spiralis*, *Lin.*; *Eng. Bot.* t. 1685.*γ. volubilis*; frond spirally twisted; vesicles generally wanting; apices long, elliptical. *Raii Syn.* 42. n. 6.*δ. acutus*; frond narrow, producing vesicles; apices long, lanceolate. *F. spiralis*, *Esp.**ε. angustifolius*; frond narrow; vesicles mostly wanting; receptacles sub-pedunculated, long, between linear and lanceolate, acuminate. *F. longifructus*, *Fl. Fran. ed. 2da*, 2 p. 19.*ζ. Sherardi*; frond narrow, dwarfish; vesicles none; receptacles short, oblong. *F. Sherardi*, *Stackh. Ner. Brit.* p. 72. t. 13.*η. linearis*; frond narrow, dwarfish; vesicles none; receptacles long, between linear and lanceolate. *F. Quercus Marina*, *Gmel. Hist. Fuc.* p. 2.

UNDER the term FUCI are comprehended a tribe of plants, commonly included with the Ulvæ and marine Confervæ, under the more general title of submerged Algæ, or Thalassiophyta, and well known in this country by the popular name of Sea-weeds. In Scotland the name Wrack, (probably from the French *varec*.)

is often applied to those fuci, which are cut on the shores for the manufacture of kelp. In the sexual system, the fuci form part of the third order Algæ, of the last class Cryptogamia. The word fueus (*φοκος*), which signifies paint, may be supposed to allude to the quality possessed by some of the small reddish species, of affording a sort of rouge. They are marine plants, either floating free in the water, and destitute of roots, or attached by a fibrous or scutate base. Their texture is fibrous, mostly coriaceous, sometimes gelatinous or membranaceous; often branched or shrub-like, and traversed with a longitudinal nerve or midrib. They produce seeds or sporules, either immersed in the frond, or in capsules or tubercles, variously situated; and most of them are furnished with air vesicles.

The economical uses of sea-weeds are numerous and important. To the agriculturist, they furnish a valuable manure. To the glass-maker and soap-boiler they yield the fixed alkali, and the manufacture of kelp for this purpose has become a valuable source of revenue to the proprietors of the rocky shores of Europe, particularly of Britain, and more especially of those of the Northern and Western Islands of Scotland. From the ashes of the fuci the chemist has of late years derived the very curious elementary substance named *iodine*. Several of them are so rich in saccharine matter and vegetable mucilage, that on the shores of the northern countries of Europe, and the Scottish islands, much of the winter provender of cattle is derived from them. A few of them also afford food to man; some of the smaller sorts are used as condiments; while others are employed as medicines.

The *Fucus vesiculosus* is a perennial plant, growing every where on the British shores, on rocks and stones, or cast up on the beach; bearing its fructification in the spring. The root is an expanded, black, woody, callous disc. The frond is smooth and glossy, flat, winged, from one to four feet long, and from half an inch to an inch and a half wide, linear, forked near the root, and afterwards repeatedly dichotomous, of a dark olive-green colour, becoming paler near the apices, and when dry black and dull. All the branches are nearly of equal height, with the apices

rounded, and not infrequently notched; the margins entire. The substance of the frond is coriaceous, flexible and tough, but brittle after it is dried; and through its whole length furnished with a midrib of a blackish colour, and as thick as a goose-quill, but gradually growing pale and thin. In the membranous part of the frond throughout its whole length are found immersed spherical vesicles, varying in size from a pea to a hazel-nut, externally smooth, and containing in their cavity a quantity of air. Besides these, particularly in the spring, almost always near the apices, are often observable elliptical swellings of a pale yellowish green colour, an inch or two in length, and sometimes occupying the midrib, so that the whole becomes inflated and nearly cylindrical. The fructification consists of compressed, turgid receptacles, solitary or twin, placed at the ends of the branches, varying in form, but mostly elliptical, from one-fourth of an inch to two inches long, and perforated with very minute pores, under which lie imbedded spherical tubercles, composed of short jointed fibres, mixed with seeds of an elliptical form, surrounded with a pellucid limbus, and appearing under a powerful microscope to contain six or seven roundish grains: the centre of the receptacle is filled with a colourless and tasteless mucus, through which passes a network of anastomosing fibres. The varieties α . β . γ . and δ . are found upon the shores of the British isles, and of all the north of Europe, plentifully.—Fig. (*a*) part of the outside of a receptacle magnified; (*b*) horizontal section of a receptacle; (*c*) tubercle; (*d*) seeds; (*e*) contents of a seed; (*f*) some of the same; (*g*) longitudinal section of a vesicle.

In Scotland this is sometimes called *Black Tang*; sometimes *Kelp-ware*, and when the receptacles are large and swollen, *Strawberry-ware*. The Norwegians call it *Kue-tang*. It is the *Quercus Marina* or *Sea Oak* of the older writers.

QUALITIES AND CHEMICAL PROPERTIES.—The most important uses to which *Fucus vesiculosus* is applied is in the manufacture of *Kelp*, which is a very impure carbonate of soda, containing sulphate and muriate of soda, and also sulphuret of soda, with a portion of charcoal; and is manufactured in Scotland chiefly in the months of July and August. The kiln in which it is made is a round pit or basin dug in the sand or earth on the beach, and

surrounded with a few loose stones. In the morning a fire is kindled in the pit, generally by means of peat or turf. This fire is generally fed with sea-weed, in such a state of dryness that it will merely burn. In the course of eight or ten hours the furnace is found to be nearly full of melted matter. Iron rakes are then drawn rapidly backward and forward through the mass in the furnace in order to *compact* it, or bring it into an equal state of fusion. It is then allowed to cool, when it is broken into pieces, and carried into a storehouse, to remain till shipped.

The fuci which are chiefly used on our shores are the *Fucus vesiculosus*, *nodosus*, and *serratus*. In some places, *F. loreus* and *filum* are employed, but not to any extent. By means of a boat and long sharp hooks, *F. digitatus* is cut in some places, and this species, together with *F. saccharinus*, *bulbosus*, and *esculentus*, form much of the drift-ware employed in making kelp. Some of them are no doubt richer than others in the alkali, but when fit for burning they are all capable of yielding about one-fifth of their weight in kelp.

Iodine, as already hinted, is also yielded by kelp. Its name being derived from *ιωδες*, *violaceus*, in allusion to the very striking circumstance of its yielding a violet-coloured gas on being exposed to an increase of temperature. It was first discovered accidentally by M. Courtois, a manufacturer of nitre in Paris, and its properties have been since accurately examined by Clement and Desormes, Gay Lussac, Sir H. Davy, Vauquelin, and Wollaston. The latter was the first who gave a regular formula for extracting it; he dissolved the soluble part of kelp in water, and after evaporating it as long as it continued to afford crystals, he added a little more sulphuric acid to the remaining liquid than was necessary to neutralize the free soda which it contained, and after all action had ceased, he added as much black oxide of manganese to the clear liquor which remained, and on the application of heat, iodine was disengaged. The soap manufacturers obtain their principal supply of soda from kelp; and Dr. Ure found, that a very large quantity of iodine may be obtained from the brown oily liquid which remains after most of the soda has been abstracted from the kelp-ley. A basin is filled about one-half with this liquid, after it has been

heated to 230, and for every eight ounces about one ounce of sulphuric acid is added, previously diluted with its own bulk of water; a violent effervescence immediately ensues; sulphur is deposited, while sulphureted hydrogen, sulphurous, carbonic, and muriatic acids are disengaged; and on cooling, crystals are deposited, consisting principally of the sulphate of soda. The liquid is filtered, put into a glass retort, and to every twelve ounces, one thousand grains of the black oxide of manganese are to be added; heat is now to be applied, and the iodine rises in a rich purple vapour, which condenses in crystalline plates. It is collected by adapting a receiver to the retort, from which it is easily withdrawn by a little water.

Iodine then is a solid substance of a bluish-black colour and metallic lustre. It is soft and friable, and is obtained generally in the form of small scales, sometimes in rhomboidal plates, and even in elongated octohedrons; it does not conduct electricity. It has a pungent odour, an acrid taste, and stains the skin of a deep brownish-yellow colour; when taken in considerable quantity, it acts as a strong poison. It evaporates at the ordinary temperature of the atmosphere, melts at 227, and is sublimed at 350. When mixed with water it passes to the gaseous state along with its vapour at a boiling temperature. It is soluble in alcohol and ether, but sparingly so in water; its solutions have an orange-brown tint, destroying the vegetable colours. *Starch* is the most delicate test of iodine, forming a compound of a very rich blue colour, when added to any solution which contains it in an uncombined state. In its general properties it bears a great analogy to chlorine, and like it, is always attracted to the positive pole of the galvanic battery, when disengaged from its combinations with the metals or other inflammable bodies. The specific gravity of iodine is 4.941, and that of its vapour 8.678, 100 cubic inches weighing about 270 grains.

Iodine is considered by the most eminent chemists to be a simple body. It forms with oxygen the *iodic acid*, and with chlorine the *chloriodic acid*. *Iodates* are prepared either by the direct addition of iodic acid to salifiable bases, or by the action of iodine on these substances in water. Thus the iodate of potash is obtained by pouring a solution of potash on a fixed quantity of

iodine, till it loses colour. Now part of the water is decomposed; its hydrogen combines with one portion of iodine, and forms hydriodic acid, while oxygen at the same time unites with another portion, and forms iodic acid; these two acids combine with the potash, and we thus obtain a mixed solution of *iodate* and *hydriodate of potash*. This solution is then evaporated to dryness and digested in alcohol, which dissolves the *hydriodate*, and leaves the *iodate*, which is insoluble in alcohol. The supernatant liquor being poured off and evaporated, the *hydriodate* is obtained, and is very soluble in water.

MEDICAL PROPERTIES AND ECONOMICAL USES.—The *F. vesiculosus* is well known as an excellent manure for land, to which purpose it is often applied in the maritime parts of Scotland and other countries. In the islands of Jura and Skye it serves as a winter food for cattle, which regularly come down to the shores at the recess of the tides to seek for it. Linneus informs us that the inhabitants of Gothland boil it in water, and mixing a little coarse meal or flour, feed their hogs with it; for which reason they call the plant *swine-tang*. And in Scania, he says, the poor people cover their cottages with it, and sometimes use it for fuel.

Its medical virtues have been much celebrated by Dr. Russell in his Dissertation concerning the uses of Sea-water in the Diseases of the Glands. He found the saponaceous liquor or mucus in the vesicles of the plant to be an excellent resolvent, and useful in dispersing scrofulous swellings. He recommends the patient to rub the tumour with these vesicles bruised in the hand, and afterwards to wash the part with sea-water. But the most beneficial use to which the *F. vesiculosus* is applied is in making kelp, already mentioned: a work much practised in the Western Islands.

Dr. Coindet, of Geneva, suspecting from analogy that *iodine* was the active principle in sponge, was induced to try it in those cases for which burnt sponge was administered, and his success in the treatment of bronchocele was very remarkable. It has been used by many practitioners both on the continent and in our own country, with undiminished reputation. Success is most commonly to be expected in recent cases, and when the patient is young; several instances have, however, occurred, in which old, hard, and very large goîtres have yielded

to this remedy; but in such instances as the course of treatment is protracted, it may have injurious effects on the stomach; to obviate which it has been the object to introduce the remedy by means of friction; and a case is recorded by Mr. Rickwood, where a patient was cured at the age of seventy years. Iodine has been likewise employed in the treatment of scrofula with equal success; and in the hands of M. M. Hufeland and Osan, the efficacy of the tincture of iodine, and hydriodate of potass have been fully proved; they have also employed the same preparations with advantage in scirrhus and cancer of the uterus. Dr. Wagner speaks of its beneficial influence on a tumour situated in the neighbourhood of the jaw, which he considered cancerous; and Dr. Hanemann is satisfied that iodine exerted a remarkable influence on cancer of the uterus in the most advanced stage.

There seems to be no reason for doubting that this new remedy exerts a very marked influence over scrofulous and adventitious deposits. We have therefore numerous and well attested cases of its successful employment in an immense number of diseases, such as white-swelling, deafness, paralysis, distortion of the spine, &c. Professor Maunoir states, that a child laboured under a considerable white swelling of the knee, and could not walk without crutches. The usual modes of treatment proving unavailing, the tumour was rubbed night and morning with iodine ointment, while the tincture was given internally in small doses. After a few weeks a perfect cure took place.

If iodine be taken in doses too large, or be not properly watched as to its effects, it is apt to produce inflammation of the stomach, attended by nausea, incessant vomiting, and general emaciation; while the testes and mammæ diminish in a remarkable manner. These facts, however important to be known, do not in the least militate against the judicious employment of a remedy, that should be viewed as a valuable boon, by every scientific physician; for we have the names of Dr. Gardner, Dr. De Carro, Dr. Roots, Dr. Baron, Mr. Austin, and many other eminent names, who, closely watching its effects, in well-regulated doses, consider it as a remedy easily to be managed; and in our own practice, we continually employ it with perfect satisfaction, not only as a safe, but very efficacious agent.

Dr. Baron has employed it with some success in the treatment of scrofulous phthisis, and other tuberculous affections; and the late Mr. Haden also reports a case of phthisis supposed to have been cured by iodine. Cases are also recorded of its success in ovarian dropsy. Dr. Coindet praises it as a powerful emenagogue; an opinion which has been confirmed by Professor Brera and other physicians. In fact, that gentleman has employed the remedy very extensively. Besides bronchocele, and suppressions of the catamenia, which have been cured by it, he mentions several cases of indurated glands, tabes mesenterica, chronic dysentery, and hæmoptœ, supervening to suppressed menstruation; laryngeal phthisis, leucorrhœa, syphilitic enlargements, &c. as having been also cured by it. Mr. Callaway, surgeon to Guy's Hospital, confirms its success in scrofulous cases and in enlarged mesenteric glands. M. Magendie informs us that he gave iodine in a case represented to him to be suppressed catamenia, and at the end of three weeks abortion was the result!

It will be seen from this account, that the value of iodine as a remedial agent in a vast variety of important diseases, does not rest on the testimony of one or two individuals only; but that its employment is established through the concurrent testimonies of many eminent men in different countries; and we have chosen rather to bring together *many facts*, than to speculate on its mode of action, or to recommend it for particular diseases. It must be borne in mind that it is a *new remedy*, and although we can administer it with precision in many cases, and with the greatest confidence as to its results, we should view it still as an agent, which has powerful claims to our attention rather as a novel remedy, than as one of which we have ascertained the limits of its applicability. The following are the most useful preparations:—

TINCTURE OF IODINE.

Take of, Alcohol at 35° 1 ounce.*
Iodine . . . 48 grains.—Mix.

This tincture, says M. Magendie, is less frequently employed than the two following preparations. It is given in doses of from four to ten drops, three times a day, in a glass of sugared

* An ounce is 7 drachms, 52½ grains, Troy weight.

water, or infusion of liquorice; the doses may be gradually augmented to twenty drops.

IODURETTED SULPHURIC ETHER.

Take of, Sulphuric ether 1 gros.*
Pure iodine . . 6 grains.—Dissolve.

Thirty drops contain one grain of iodine, and the patient can scarcely bear more than ten drops at a time.

SOLUTION OF HYDRIODATE OF POTASS.

Take of, Hydriodate of Potass 36 grains.
Distilled water . . 1 ounce.—Dissolve.

These two preparations, whose mode of exhibition is the same as that of the tincture of iodine, are employed, as well as it, in the treatment of bronchocele and scrophula; in the latter case some tonic is generally combined. M. Magendie states, that the solution of the hydriodate of potass may be gradually increased to three *gros* a day, without unpleasant consequences; debilitated and very nervous women have taken it in this quantity, for many weeks, without any derangement of function: with this dose two cases of cancer of the tongue recovered in the space of a fortnight, in the incurable wards of L'Hospice de la Salpêtrière.

OINTMENT OF HYDRIODATE OF POTASS.

Take of, Hydriodate of potass $\frac{1}{2}$ gros.
Spermaceti ointment 1 $\frac{1}{2}$ ounce.—Mix.

A small piece of this ointment may be used night and morning, in the way of friction upon enlarged glands. At the end of a week it may be increased in quantity, according to the age of the patient and extent of the tumour. Sometimes, by these means, the complete resolution of tumours is effected, which could not be removed entirely by saline solutions. Occasionally it is necessary to apply leeches likewise to the indurated glands.

There are some other preparations occasionally employed, such as the iodate of zinc, iodurets of mercury, &c.; for accounts of which the curious reader may consult Houlton's Translation of "Magendie's Formulary."

* The *gros* is 59 grains.

FUCUS HELMINTHOCORTOS.—*Corsican Worm-moss.*

SPEC. CHAR.—*Fronde* cartilaginous, cylindrical, capillary, growing in matted tufts, jointed, irregularly dichotomous; apices acuminate. *Capsules* hemispherical, scattered, lateral, sessile.

Syn.—*Conferva Helminthocorton*, *Lin. Syst. Nat. Gmel. v. 2. p. 1394.*

Fucus Helminthocortos, “*Hæmmerten, Dis. cum icone*” teste *Rothio Fl. Fr. ed. 2da ii. p. 37.*

Ceramium Helminthocortos, *Roth. Cat. Bot. ii. p. 168. iii. p. 157.*

THIS small species is found growing in the Mediterranean sea, on the coast of Corsica, attached to calcareous rocks and other marine bodies. The root is wholly composed of creeping fibres, variously branched and thickly interwoven. The fronds are very numerous, from the same base, clustered into compact, cushion-like tufts, some inches in width, an inch or an inch and half long, erect, straight, or slightly flexuose cylindrical, not thicker than hog’s bristles, once or twice irregularly dichotomous at short intervals, with erecto-patent segments of nearly equal height, all remarkably acuminate. The fructification consists, according to Dr. Roth, of small, hemispherical capsules, sessile upon the sides of the branches, solitary, generally few in number and remote from each other; when young composed of a very thin membrane, white and pellucid; when old, their surface becomes unequal as if tubercled, and in the midst is discernible a small membranaceous pellucid vesicle: colour, light reddish-brown, semi-transparent, turning white if long kept in fresh water, and darker when dried: substance, cartilaginous, inclining to horny, tough, and flexible. On the plate (No. 108) we have given a tuft of *F. Heminthocortos* of the natural size. (a) A single frond magnified; (b) part of the same.

MEDICAL PROPERTIES AND USES.—This plant though almost entirely unknown among the practitioners of this country, has long been celebrated on the continent, and is there in common use as a vermifuge, under the name of the moss or the Corraline of Corsica. It has also been recommended as a remedy in cancer!



Pl 119.



Aloe vulgaris.

ALOE VULGARIS.

*Yellow-flowered Aloe.**Class VI. HEXANDRIA.—Order I. MONOGYNIA.**Nat. Ord. LILIACEÆ, CORONARIÆ, Lin. ASPHODELI, Juss.*

GEN. CHAR. *Corolla* tubular, border spreading, 6-cleft, bottom nectariferous. *Filaments* inserted into the receptacle. *Capsule* superior, oblong, 3-celled. *Seeds* several, angular.

SPEC. CHAR. *Leaves* sword-shaped, toothed, upright. *Stem* branched. *Flowers* yellow, in a dense panicle.

Syn.—*Aloe*, *Trag. Hist.* 932; *Fuchs. Hist. v. 2.* 160; *Matth. Valgr. v. 2.* 45, 46; *Camer. Epit.* 450.

Aloe vulgaris, *Bauh. Pin.* 286; *Tourn. Inst.* 366; *De Candolle Pl. Grasses*, 27, *cum icone. Ait. Hort. Kew. ed. 2. v. 2.* 292; *Ger. Em.* 507; *Fl. Græc. Sibth. v. iv. p. 34. t. 341.*

Aloe perfoliata π, vera, *Lin. Sp. Pl.* 458.

Aloe perfoliata λ, vera, *Willd. Sp. Pl. v. 2.* 186.

Aloe barbadensis, *Haworth in Trans. of Lin. Soc. v. 7.* 19.

Αλοη, *Dios. lib. 3. cap. 25.*

THE *Aloe vulgaris*, which is the species that Sloane describes in his History of Jamaica, as producing the Barbadoes extract, is a native of the Levant and Barbary. Though generally known under the name of Barbadoes Aloe, it is said to be very common in the West India islands, where the plants are propagated on the poorest soil for the purpose of obtaining the Hepatic aloes of the shops. It is the αλοη of the ancient Greeks, and was found by Dr. Sibthorpe growing spontaneously in the island of Cyprus.

The stem is short, thick, shrubby, branched, and like the rest of the plant, abounding in a clammy, bitter, fetid, yellowish juice. The leaves are about four inches broad at their base,

crowded sessile, nearly erect, or somewhat spreading, a foot long, lanceolate, acute, fleshy, smooth, succulent, concave above, of a seagreen colour, and when young, spotted with white. The flower stem rises about three feet in height; it is round, thick, erect, smooth, of a brownish purple colour, branched at top, and terminated by the flowers which form a slender, loose spike, and are of a bright yellow colour. The flowers are numerous, spreading horizontally in an elegant spike, and stand on short, smooth footstalks, each flower being accompanied by a single bractea. The bracteas attached to the flower stems are triangular, membranaceous, and of a deep brown colour. The corolla is 1-petalled, deeply 6-cleft, cylindrical and oblong; the outer segments are larger than the inner, ovate, blunt, and spreading at the border. The stamens are thread-shaped, as long as the corolla, or longer, inserted into the receptacle, and furnished with oblong, incumbent anthers. The germen is oblong-ovate, angular, bearing a style nearly of the length and shape of the stamens, with a small, simple stigma. This species and *stricta*, are the softest and most succulent of all the Aloes; the former is the only species whose flowers are yellow. Fig. (a) represents a flower with its bractea; (c) the pistil with the base of the corolla; (b) the same with the corolla removed.



Aloe Socotrina

ALOE SOCOTRINA.

Socotrine Aloe.

SPEC. CHAR. *Leaves* sword-shaped, somewhat curved at the apex, those of the stem sheathing; marginal teeth small, white, numerous. *Flowers* in spikes, drooping.

Syn.—*Aloe vera*, *Mill. Dict. n.* 15.

Aloe rubescens, *Plante's Grasses*, p. 15, *cum icone mala*.

Aloe americana ananifolia floribus suave-rubentibus, *Pluk. Phyt. t.* 240.

Aloe vera minor, *Munting. Aloidar. cum icone*.

Aloe perfoliata socotrina, *Ait. Kew. l.* 466; *Bot. Mag. v.* 14. *t.* 472; *Stokes v.* 2. *p.* 269.

Aloe socotrina, *Haworth in Trans. of Lin. Soc. v.* 7; *Woodv. Med. Bot. v.* 4. *ed. 2d. t.* 260.

FOREIGN.—*Suc d'Aloes*, Fr.; *Aloe*, It. and Sp.; *Glausinde Aloe*, Ger.; *Elwa*, Hind.

THE Socotrine Aloe is a perennial plant, with a strong fibrous root; flowering in winter and spring. The stem is round, smooth, erect, of a glaucous green colour, towards the top, beset with ovate bracteal scales, and rises to the height of three or four feet. The leaves are numerous, spreading, and proceed from the upper part of the root; they are about two feet long, broad at the base, tapering gradually to a point, thick, fleshy, succulent, channelled, glaucous, smooth, and armed at the edges with remote, whitish horny teeth. The flowers are produced in terminal spikes, of a purple or reddish colour; each flower being accompanied with a single ovate, acute, broad, membranous bracte, white, with three green streaks, and shorter than the corolla. The corolla is bell-shaped, and divided into six narrow petals; the three inner segments are white with three green lines; the outer one narrower and less concave. The filaments are six tapering yellowish, inserted into the receptacle and furnished with oblong orange-coloured anthers; the germen is oblong,

with a simple slender style, and an obtuse stigma.* The capsule is oblong, 3-celled, containing many angular seeds.—Fig. (a) represents a flower cut open; (b) the germen and style.

All the species of this extensive genus are natives of hot climates, and most of them grow at the Cape of Good Hope.

It is now well known that numerous individuals of the Aloe family, furnish the concrete juice, met with in commerce under the name of *aloes*; but the subject is still surrounded with so many difficulties, that we must crave the indulgence of our readers, should we be so unfortunate as to perpetuate errors, or fail to increase their present stock of knowledge. Six different kinds of aloes are met with in commerce:—

1st. *Barbadoes aloes*, also called *Hepatic aloes*, and *extract of the common aloe*, is, as stated before, the produce of the *A. vulgaris*. The following account of the culture pursued at Barbadoes, and of the method by which the juice is collected, was communicated by Mr. Millington to the Medical Journal, vol. viii.

“The lands in the vicinity of the sea, that is, from two to three miles, which are rather subject to drought than otherwise, and are so stony and shallow, as not to admit of planting sugar-canes, with any prospect of success, are generally found to answer best for the aloe plant. The stones, at least the largest ones, are first picked up, and either packed in heaps upon the most shallow, barren spots, or laid round the field as a dry wall. The land is then ploughed lightly, and very carefully cleaned of noxious weeds, lined at one foot distance from row to row, and the young plants set, like cabbages, at about five or six inches from each other. This regular mode of lining, and setting the plants, is practised by the most exact planters, in order to facilitate the weeding of them by hand, very frequently because if they are not kept perfectly clean and free from weeds, the produce will be but very small.

“They will bear being planted in any season of the year, even in the driest, as they will live on the surface of the earth for many weeks, without a drop of rain. The most general time, however, of planting them is from April to June. In the March following, the labourers carry a parcel of tubs and jars into the field, and each takes a slip or

* The figure here represented was made from a fine specimen, which blossomed this season (April 1829) at Nine Elms, Chelsea, in the hot house of our respected friend, A. H. Haworth, Esq. F.L.S.

breadth of it, and begins by laying hold of a bunch of the blades, as much as he can conveniently grasp with one hand, while with the other he cuts it just above the surface of the earth, as quickly as possible, that the juice may not be wasted, and then places the blades in the tub, bunch by bunch, or handful by handful. When the first tub is thus packed quite full, a second is begun, each labourer having two; and by the time the second is full, all the juice is generally drained out of the blades in the first tub. The blades are then lightly taken out, and thrown over the land by way of manure, and the juice is poured out into a jar. The tub is then filled with blades, and so alternately till the labourer has produced his jar full, or about four gallons and a half, which is often done in six or seven hours, and he has then the remainder of the day to himself, it being his employer's interest to get each day's operation as quickly done as possible.

"I should observe, that although aloes are often cut in nine, ten, or twelve months after being planted, they are not in perfection till the second and third year; and that they will be productive for ten or twelve years, or even longer, if good dung, or manure of any kind, is strewed over the field once in three or four years.

"The aloe juice will keep for several weeks without injury. It is, therefore, not boiled till a sufficient quantity is procured to make it an object for the boiling house. In the large way, three boilers, either of iron or of copper, are placed to one fire, though some have but two, and the small planters only one. The boilers are filled with the juice, and as it ripens, or becomes more inspissated, by a constant but regular fire, it is ladled forward from boiler to boiler, and fresh juice is added to that farthest from the fire, till the juice in that nearest the fire (by much the smallest of the three, and commonly called by the name of *tatch*, as in the manufactory of sugar) becomes of a proper consistence to be skipped or ladled out into *gourds*, or other small vessels used for its final reception. The proper time to ladle it out is when it is arrived at what is termed a resin height, or when it cuts freely, or drops in thin flakes, from time to time, into the *tatch* for that purpose. A little lime water is used by some aloe boilers, during the process, when the ebullition is too great. As to the sun-dried aloes, which are more approved for medicinal purposes, very little is made in Barbadoes. The process is very simple. The raw juice is either put into bladders, left quite open at the top, and suspended in the sun, or in broad shallow trays of wood, pewter, or tin, exposed also to the sun, every dry day, until all the fluid parts are exhaled, and a perfect resin formed, which is then packed up for use or for exportation."

2nd. *Socotrine aloes*.—The real socotrine aloes, which is rarely met with in commerce, is produced by the *A. socotrina*. It grows in abundance on the island of Zocotora, which was first discovered by the Portuguese in 1503, and now belongs to the Princess of Hadramanb, a province of Arabia, contiguous to Yemen. The plant is also found in many parts of the South of Africa, particularly in the kingdom of Melinda, where the

greater part of the extract is prepared that is now sold under the name of Socotrine, and Cape aloes. India, Borneo, and Sumatra, also furnish us with this kind of aloes, which are sometimes packed in casks, and at others in skins.

In the island of Zocotora, the inhabitants cut or chop the leaves, and make a slight pressure to obtain the juice, which is left to settle. It deposits a feculent matter, which is thrown away. The supernatant liquor thus freed from its grosser parts, is left to spontaneous evaporation; and it is this difference in the two processes that accounts for the superiority of the real socotrine aloes over that of the Cape: for there, the Hottentots cut the end of the leaves and catch the liquor which flows from them in proper vessels, the lower leaves of the plant generally serving for canals to conduct it into them. The juice thus obtained, is at once reduced to a suitable consistence over the fire, and afterwards packed in boxes containing from one to three hundred pounds.

Socotrine aloes is in solid fragments, compact, heavy, and brittle. It is of a yellowish red or brown colour, in proportion to its purity; is glossy, and breaks with a smooth conchoidal fracture. The thin edges are reddish, and semi-transparent. It is rendered friable by cold, softens by heat, and is adhesive to the touch: is easily reduced to powder, which is of a golden yellow colour: but it soon condenses again into a mass, the particles of which adhere strongly. The odour is strong, *sui generis*: the inferior sorts fœtid and nauseous. The taste is bitter, resembling bile. According to Bouillon La Grange, and Vogel, it is composed of 32 parts of resin, and 68 of extractive. It dissolves almost entirely in spirits of wine, and yields a volatile oil by distillation. It is considered to be more mild in its operation than the other kinds of aloes. The *Cape aloes* differ from the Socotrine in possessing a stronger and less agreeable odour. They are also of a yellower colour, and less vitreous in appearance. The powder is of a greenish yellow, resembling gamboge, but less bright.

3rd. *Fætid, or Caballine Aloes*.—This sort is very impure, having the appearance of bitumen. It is marked with ferruginous spots on the outside, and is generally mixed with parti-

cles of burnt straw, fragments of bark, sand, &c. The powder is of a greenish brown colour, and 25 parts are soluble in water. It is not easily reduced to powder, and has the appearance of being the residuum of the boilers in which the preceding sorts were prepared, or rather, of being the residuum of the leaves from which the better parts have been already taken by one of the methods mentioned. It is chiefly used for horse medicine.

4th. *Red Aloes*.—This sort is rarely met with. It is in the form of scales, of a red and transparent appearance; and is supposed to be a natural exudation from the *A. socotrina*, which has concreted in the sun.

5th. *Mocha Aloes* resemble those brought from the Cape, but are more purgative. Little is known of this kind; but as the isle of Zocotora is so near the coast of Mocha, it is probable that they are only a variety of that so long known in commerce as the Socotrine.

6th. *Indian and Mozambique aloes* are very impure, and seem to be of an intermediate quality with the hepatic and caballine.

QUALITIES AND CHEMICAL PROPERTIES.—Barbadoes aloes is generally deeper coloured and more opaque than the Socotrine; it is more tough, and when broken, presents surfaces less shining; while its odour is very strong and highly offensive. Its colour when powdered is dirty yellow, and it is said to be more active than Socotrine aloes; and hence, though its price usually exceeds that of the other, it is principally employed in veterinary practice. It is composed of 42 parts of resin, 32 of extractive, the remainder consisting of a matter analogous to albumen.

Aloes, when pure, is completely soluble in water and alcohol; but the hepatic aloe only affords 86 parts of soluble matter to these menstrua. Aloes puffs up and crackles while burning, and gives out much thick smoke, that smells strongly of the aloes. When boiled in water and reduced to an extract, it loses much of its purgative property. It is stated by Murray, that the substance of the leaves does not partake of the qualities of the extract, which is contained only in vessels situate immediately under the epidermis; and this explains why it is that the inha-

bitants of Cochin-china are able to prepare a wholesome fecula from them. The aloes examined by Braconnot appeared to that chemist to have some particular qualities, which induced him to consider it as a distinct substance, for which he proposes the name "*amer resineux*." Trommsdorf, on the other hand, and Bouillon La Grange, and Vogel, consider it as composed of resin, and a peculiar extractive matter. M. Fabroni, in the *Ann. de Chimie*, (vol. xxv.) states that he procured from the leaves of the *A. socotrina* var. *angustifolia*, a violet dye, which resists the action of oxygen, acids, and alkalies. This juice, he says, produces a superb transparent colour, which is highly proper for works in miniature, and which, when dissolved in water, may serve either cold or warm, for dyeing silk from the lightest to the darkest shades; and he reckons it one of the most durable colours known in nature. Aloes was used among the ancients, in embalming, to preserve bodies from putrefaction. Of this aloes, interpreters understand that to have been, which Nicodemus brought to embalm the body of Christ. (John xxx. 3.)

ADULTERATIONS.—Aloes are frequently adulterated with common resin; but, according to Dr. Paris, the fraud more generally committed is that of mixing with, or substituting the inferior species for the *Socotrine*. The *Barbadoes aloes* may, independently of its want of aromatic flavour, be distinguished from the *Socotrine* by a simple test, for the latter dissolves entirely in boiling water and alcohol, whereas the former, when treated in a similar manner, leaves a considerable residue. Sometimes the *Caballine aloes* is made to appear so bright and pure, as not to be easily distinguished by the eye even from the *Socotrine*, but its rank odour readily betrays the fraud.

MEDICAL PROPERTIES AND USES.—It is the *A. vulgaris* and *A. socotrina*, that produce the gum-resins used for pharmaceutical purposes; and they differ little in their medicinal effects. They are warm stimulating purgatives, particularly adapted for what is termed the melancholic temperament; and exercise a tonic power, proved by their extreme bitterness, and their beneficial influence in chronic affections of the stomach and bowels, as vomiting, flatulence, loss of appetite, and other symptoms

usually denominated dyspeptic. Their operation is slow, but generally effective, nor do large doses appear to exert much more power than smaller ones. The medium dose of aloes is from five to ten grains, but they are generally combined with other purgatives to obviate habitual costiveness; to remove viscosity of the intestines; and from their stimulating and tonic powers are well adapted for jaundice, chlorosis, hypochondriasis, and scrophula. Through their acting more particularly on the colon and rectum, they are efficacious in expelling ascarides, but from the same cause occasionally produce hæmorrhoids. They also impart a stimulus to the uterine vessels, and are found beneficial as emmanagogues: pregnant women should be, therefore, cautious how they persist in their use.

In doses of two drachms, aloes produce nauseating and depressing effects upon the horse, and are therefore much used in the active diseases of this noble animal, when it is necessary to diminish the force of the circulation. From six to eight drachms of aloes, combined with soap and other ingredients, also constitute the purgative-ball usually administered.

The following are some of the principal Quack or Patent Medicines that owe their activity chiefly to the aloes they contain:—

Anderson's Pills consist of Barbadoes aloes, with a proportion of jalap, and oil of aniseed.

Hooper's Pills.—Pil. aloes with myrrha, or Rufus' pill; sulphate of iron; and canella bark, to which is added a portion of ivory black. Dr. Barlow, one of the physicians to the Bath Hospital, relates a case in which these pills were retained in the intestines nearly twelve months. The facts detailed in this case are valuable, from the cautions which they suggest to regular practitioners,—who in administering pills with iron, should be careful to ensure their ready solution by appropriate combination, and also by having them always freshly prepared.—See “Lancet,” vol. xi. p. 806.

Dixon's Antibilious Pills.—These are composed of aloes, scammony, rhubarb, and tartar emetic.

Speediman's Pills.—Myrrh, aloes, rhubarb, of each, one ounce, extract of chamomile, half an ounce; beat into a mass with syrup, and divided into four grain pills.

James's Analeptic Pills.—Gum ammoniacum, pill aloes with myrrh, antimonial powder, of each equal parts, made into a mass with tincture of castor.

Dinner Pills: Lady Webster's, or Lady De Crespigny's Pills.—These popular pills are the “pilulæ stomachicæ,” vulgo, “pilulæ ante cibum” of the Codex Medicamentarius Parisiensis. Editio Quinta, A. D. 1758.

Take of Aloes, 6 drachms.

Mastich	} of each, 2 drachms.
Red rose leaves	

Syrup of wormwood, as much as may be necessary to form a mass, which is to be divided into pills of 3 grains each.

Fothergill's Pills.—Aloes, scammony, colocynth, and oxide of antimony.

Peter's Pills.—Aloes, jalap, scammony, and gamboge, of each 2 drachms; calomel, 1 drachm.

Radcliff's Elixir.—Take of Socotrine aloes, 6 drachms; cinnamon bark, zedoary root, of each, $\frac{1}{2}$ drachm; rhubarb, 1 drachm; cochineal, 3ß drachm; syrup of buckthorn, 2 ounces; proof spirit, 1 pint; water, 5 ounces. Mix.

Beaume de Vie is the compound decoction of aloes.

OFF. PREP.—Pulv. aloes comp. *L.* Pilula aloes. *E. D.* Pil. aloes comp. *L.* Pil. aloes cum myrrha. *L. E. D.* Pil. aloes et assafœtidæ. *E.* Pil. aloes c colocynthide. *E.* Pil. cambogiæ comp. *L.* Pil. Rhæi comp. *E.* Pil. scammonii comp. cum aloë. *D.* Decoctum aloes comp. *L.* Extractum aloes. *L. D.* Extractum colocynthidis comp. *L. D.* Tinctura aloes. *L. E. D.* Tinctura aloes comp. *L. E. D.* Tinctura aloes ætherea. *E.* Tinct. benzoini. comp. *L. E. D.* Tinct. Rhæi et aloes. *E.* Vinum aloes. *L. E. D.*



Mium sativum.

ALLIUM SATIVUM.

*Common Garlic.**Class VI. HEXANDRIA.—Order I. MONOGYNIA.**Nat. Ord. SPATHACÆ, Lin. ASPHODELI, Juss.*

GEN. CHAR. *Corolla* inferior, 6-parted, spreading.
Spathe many-flowered. *Umbel* heaped together.
Stigma acute. *Seeds* angular.

SPEC. CHAR. *Stem* leafy; leaves flat. *Umbel* bulbiferous; bulbs compound. *Stamens* 3-cleft.

Syn.—*Allium*, *Ger. Em.* 177; *Park. Parad. t.* 511. *f.* 6; *Camer. Epit.* 328.

Allium vulgare et sativum, *Bauh. Pin.* 73; *Hist.* 2. 554; *Trag. Hist.* 745;
Raii Hist. 1125.

Allium hortense, *Fuchs. Hist.* 696. *c.* 282.

Allium staminibus alterne trifidis, &c. *Hall. Opusc.* 331. *n.* 1.

Allium sativum, *Lin. Sp. Pl.* 425; *Willd. v.* 2. 63; *Woodv. v.* 3. *t.* 108;
Stokes v. 2. *p.* 216.

FOREIGN.—*Ail*, *Fr.*; *Ajo*, *Sp.*; *Alho*, *Port.*; *Gartenlauch*, *Ger.*; *Hvitlöken*, *Swed.*;
Tschenok, *Russ.*; *Suón*, *Chin.*

THE common or cultivated Garlic is a hardy, perennial, bulbiferous plant, growing naturally in Sicily and the south of France; flowering in July, and has been cultivated in this country since 1548. It shows the same propensity to form bulbs instead of flowers as the *A. scorodoprasum*, or Rocambole Garlic, which it also resembles in other respects.

The bulbs are composed of several oblong, subordinate bulbs, called cloves, of a pale colour internally, frequently tinged with purple on the outside, and inclosed in a common membrane, from the base of which proceed long white fibrous roots. Each clove being planted grows, and in one season attains the size and structure of the parent bulb. The stem is simple, erect, solid, and rises about two feet in height, surrounded with

many long, flat, linear, pointed leaves, of a yellowish green colour; and is terminated by a dense umbel, inclosed in a spathe containing both flowers and bulbs, which opens at one side and withers. The flowers are small, white, and destitute of a calyx: the corolla consists of six oblong petals, with tapering alternately 3-cleft filaments, shorter than the corolla, and supporting oblong, erect anthers: the germen is superior, short, angular, bearing a simple style, with a pointed stigma: the capsule is short, broad, 3-lobed and 3-celled, containing a few roundish, angular seeds. Fig. (a) represents a flower; (b) the bulb; (c) a subordinate bulb, or clove.

This plant is the *Εκοροδοη* of the Greeks, and is said to have been called *Εκοροδον*, *quasi*, *σκόριον ῥοδον*, *rudis rosa*, on account of its offensive odour. The Latin name *Allium* is supposed by some to have its origin from the Greek word *ἀνεσθαι*, *exilire*, to leap forth, from the rapidity of its growth. Amongst the Greeks, garlic was held in such abhorrence, that those who partook of it were regarded as profane. The Egyptians, however, worshipped it; and the Romans gave it to their labourers to impart strength, and to their soldiers to excite courage: their game cocks were also fed with it previously to fighting. From the following lines of Persius, it appears that it was sometimes offered to propitiate the Gods:—

“ Hinc grandes Galli, et cum Sistro lusca Sacerdos,
Incussere Deos inflantes Corpora, si non
Prædictum, ter mane, Caput gustaveris Alli.”

Let this be as it may, Horace having supped with Mæcenæ, found himself very ill, in consequence of partaking of a dish of herbs in which garlic had been put, and upon this writes an ode to his friend, part of which we cannot deny ourselves the pleasure of copying.

“ Parentis olim si quis impia manu
Senile guttur fregerit;
Edat cicutis allium nocentius.
O dura messorum ilia!
Quid hoc veneni sævit in præcerdis?
Num viperinus his cruor
Incoctas herbis me fefellit? an malas
Canidia tractavit dapes?

* * * * *

" Nec tantus unquam siderum insedit vapor
 Siticulosæ Apuliæ :
 Nec munus humeris efficacis Herculis
 Inarsit æstuosius.
 At, si quid unquam tale concupiveris,
 Jocose Mæcenas ; precor
 Mauum puella suavio opponat tuo
 Extrema et in sponda cubet.*

Notwithstanding these denunciations of Horace, Olerius states that garlic was much used in his time by nobles and courtiers ; and Haller avers that the inhabitants of all countries are very fond of it. It appears, from Tusser, to have been cultivated in the time of Queen Mary ; who says in his twelfth verse for November—

“ Set garlicke and beans at St. Edmund the king.”

Garlic is now usually propagated by detaching the cloves, and planting them in February or March ; and in this way it seldom throws up a flower-stem. The soil should be light and dry ; the sets are placed about four inches asunder, and between two and three inches deep. About the middle of June the leaves are tied in knots, to prevent the stronger plants from spindling or running to flower, and to promote the swelling of the bulbs. The crop is dug up in autumn, when the leaves begin to wither ; the bulbs are then cleaned, tied in bunches, and hung in a dry room for use.

Besides the common garlic, the following species are frequently cultivated in our gardens for culinary and other domestic purposes.

1. *ALLIUM SCHÆNOPRASUM*. The *Cive*, or *Chive Garlic*, is a small plant, with a naked stalk seldom exceeding five or six inches in height ; cylindrical, hollow, somewhat tapering leaves,

* “ If there be such an unnatural, impious wretch upon earth, as has strangled his aged father with his own hands, let him, *by way of punishment*, eat garlic, which is a thousand times more poisonous than hemlock. The reaper’s stomach must be strong indeed to digest this nauseous plant. What poison is this consumes my entrails? Was it the blood of vipers poured on these herbs that thus deceived me, or did Canidia touch the cursed dish, and impart her magic to it.

* * * * *

“ Never did the violent heat of the Dog-star thus scorch dry Apulia ; nor could the gift sent to indefatigable Hercules kindle such a fire in his body. But, waggish sir, should you ever entertain a desire to eat garlic, may your mistress deny you a kiss, and lie at a distance from you all night long in the farthest part of the bed.

and simple stamens. It is a native of Britain, growing in meadows and pastures, but is not common : it occurs, according to Mr. Neill, among other places, in the south of Scotland, on low hills near Hawick ; and also in some parts of Westmoreland : it is figured in " English Botany," v. 34, t. 2441. The bulbs are very small and flat, and grow connected together in clusters. The young leaves are employed principally for soups, and as a salad ingredient, in the spring. Sometimes they are added as a seasoning to omelets ; and they are often eaten with bread and butter.

2. *ALLIUM ASCALONICUM*. The *Ascalonian Garlic*, or *Shallot*, with a naked stem, awl-shaped leaves, globose umbels, and 3-cleft stamens, is a perennial plant, a native of the Holy Land, where it was observed by Hasselquist. *Eschalot* (*Eschalotte*, Fr.) is the more correct appellation, the name being derived by some old authors, (Bauhin for example,) and is styled *cepa sterilis*, or barren onion, from the circumstance of its seldom sending up a flower-stalk. It was cultivated here in 1633. In size and general growth the plant resembles the Chive ; but it produces bulbous roots composed of cloves like garlic. These are used for culinary purposes in the manner of garlic ; but they are milder, and do not communicate to the breath the offensive flavour which garlic or even raw onions impart.

3. *ALLIUM SCORODOPRASUM*. *Rocambole Garlic* ; *Ail d'Espagne* of the French, is a perennial plant, indigenous to Sweden and Denmark, and was cultivated by Gerarde in 1596. It has compound bulbs, like the common garlic, but the cloves are much smaller. It sends up a stem two feet high, which is bulbiferous ; the leaves are rather broad and crenate at the edges ; the flowers, which are collected in a sort of globular head, are of a pale purple colour. The cloves are used in the same manner as garlic or shallot, and nearly for the same purposes.

4. *ALLIUM FISTULOSUM*. *Cibol* or *Welsh Onion* ; *Le Ciboule de St. Jaques* of the French, is a perennial plant, a native of Siberia. It appears to have been cultivated in 1629, but it was known a long time previously. It produces no bulbs, but the fistular leaves, and the lower part of the stems, are much used in salads, in the spring months.

QUALITIES AND CHEMICAL PROPERTIES.—Every part of the common garlic has an offensive odour, and a biting acrimonious taste, particularly the bulbs, which when dried lose nearly two thirds of their weight. The expressed juice is of a thick consistence like mucilage, and slightly reddens vegetable blues. When diluted with water and filtered, it yields flakes of albumen when boiled. The residue consists chiefly of mucilage, of which garlic yields a very great proportion, and of extractive. This last is somewhat acrid in its nature. When garlic is distilled with water, it yields a portion of yellow-coloured volatile oil, at first lighter than water, but gradually becoming heavier as the distillation advances. To this oil garlic owes its most remarkable properties. Its taste is very acrid, and its smell strong. When applied to the skin, it produces an irritation not inferior to cantharides, and like it, might be employed to blister the skin. When triturated with oxide of iron, it immediately strikes with it a black colour; but it has no effect upon any other metallic oxide. When garlic is heated with alcohol, the liquid assumes a reddish-yellow colour, and leaves, when evaporated, a brown extract, very acrid, which extracts moisture from the air. When garlic is distilled, it yields first a liquid slightly coloured, and having a very acrid taste; then a thick brown oil, and abundance of inflammable air and carbonic acid. The liquid in the receiver emits the smell of ammonia when mixed with lime. When 40.320 parts of garlic were incinerated, they left 4896 parts of ashes, or about one-eighth of the original weight. From 172 parts of pure ashes Cadet obtained the following substances :—

Potash	58.0
Sulphate of soda, with some muriate	33.0
Alumina	2.0
Phosphate of lime	15.6
Oxide of iron	1.5
Magnesia	9.0
Lime	14.0
Silica	8.0

From 1406 parts of fresh garlic he obtained—

Mucilage	520
Albumen	37
Fibrous matter	48
Water, by estimate	801
	<hr/>
	1406

Bouillon-Lagrange has detected in garlic, besides the acrid oil, a quantity of sulphur, starch, and saccharine matter.

MEDICAL PROPERTIES AND USES.—Garlic resembles the squill in its medical properties, being diuretic, diaphoretic, and expectorant. Cullen asserts that it acts as a stimulus more promptly and energetically than any other, and it is much commended by Bergius for its virtues in agues; in dropsical affections by Sydenham, and in scurvy by Dr. Lind. It has long been celebrated as a domestic remedy for worms; and instances are related by Mosentein and Tissot of its expelling tænia; the usual method of administering it being to give the expressed juice in a little milk, or to boil it with sugar to form a syrup; it is however rarely used in modern practice, having given place to remedies of more decided utility, and less nauseous to the taste. In France, the expressed juice diluted, is occasionally injected into the rectum, to dislodge ascarides; and is much employed in asthma, catarrh, and torpor of the abdominal viscera. Sydenham extols the application of garlic to the soles of the feet, as an efficacious method of producing revulsion from the head; and it is occasionally applied in the form of poultice to boils and indolent tumours. Given in considerable doses, garlic is capable of producing inflammation of the alimentary canal; but taken in moderation, is considered highly beneficial to soldiers and sailors when exposed to a damp atmosphere; and is recommended to make part of the regimen of those who are exposed to the plague and other pestilential disorders. Celsus recommends garlic mixed with rue, as an external application against the bites of scorpions and venomous spiders: “Et ad scorpionis autem et ad aranei ictum, allium cum ruta recte miscetur, ex oleoque contritum, superimponitur.”—*De Med. l. v. c. xxv. 6.*

Dr. Paris asserts that the most powerful antidote to the fla-

vour of this tribe of vegetables on the aromatic leaves and seeds of the *umbelliferæ*; and if leek or garlic be mixed with a combination of aromatic ingredients, their virulence will be greatly mitigated and corrected: a fact which did not escape the observation of the husbandman in Virgil:

“Allia, Serpyllumque, herbas contundit olentes.”

Eclog. 2. line 11.

Menander also states that *baked beet-root* entirely takes off the odour of garlic.

OFF. PREP.—Syrupus allii. D.

TAYLOR'S REMEDY FOR DEAFNESS, is garlic infused in oil of almonds, and coloured by alkanet root.

ALLIUM PORRUM.—*The Leek.*

SPEC. CHAR. *Umbel* globose. *Stem* smooth. *Leaves* flat. Three outer *petals* scabrous on the outside. *Stamens* 3-cleft. *Bulb* coated.

Syn.—Porrum capitatum, *Ger. Em.* 174; *Fuchs. Hist.* 605.

Porrum, *Bauh. Hist.* v. 2. 551; *Camer. Epit.* 321; *Park. t.* 511. f. 5; *Raii Hist.* 1126.

Allium porrum, *Lin. Sp. Pl.* 423; *Willd.* v. 2. p. 64; *Hall. Helv. n.* 1217; *Plenck. Icon. t.* 253; *Stokes, v.* 2. p. 227.

FOREIGN.—Poireau, Fr.; Porro, It.; Spanische lauch, Ger.

THE Leek is a biennial plant, a native of Switzerland, flowering in May. It is mentioned by Tusser in 1562, but was no doubt known in this country long before that date. There are three varieties: the narrow-leaved, or Flanders leek; the Scotch, or flag leek, sometimes called the Musselburgh leek; and the broad-leaved, or tall London leek. The latter variety is often cultivated; but for exposed situations, Mr. Patrick Neill recommends the Scotch leek, being much the more hardy.

The bulbs are white, globose, composed of concentric circles, on a radical plate, from which spring fibrous roots. The stem,

which is an erect scape, rises three feet, and is leafy at bottom ; the leaves flat, linear pointed, an inch wide. The flowers are in close, very large spherical umbels, on purplish peduncles. The corolla is bell-shaped ; petals purplish, rough-keeled, the three outer oblong, lanceolate, glabrous at the margin, inner oblong, broader ; stamens rather longer than the corolla, three of them toothed at the margin ; germen superior ; style simple, stigma acute.

QUALITIES.—The scent of the whole plant is pungent, and its taste extremely acrimonious. By boiling, the essential oil is dissipated on which its active properties depends, and it becomes comparatively bland and insipid.

MEDICAL PROPERTIES AND USES.—Its medical uses are similar to those of garlic, but less energetic. Its great acrimony renders it stimulant, and it is probably, as has been said, diuretic ; hence the expressed juice is sometimes given with advantage in dropsical cases, in doses from ʒß. to ʒij., mixed with mucilage or syrup. The whole plant is used as a pot herb ; but the blanched stem is most esteemed. It is in season in winter and spring, and is chiefly used in soups and for stewing.

ALLIUM CEPA.—*Common Onion.*

SPEC. CHAR.—*Scape* naked, tubular, swelling out below, longer than the leaves. *Leaves* cylindrical, smooth. *Umbel* subglobose. Petals nearly equal.

Syn.—*Cepa vulgaris*, *Raii Hist.* 1116.

Cepa alba, *Ger. Em.* 169.

Allium cepa, *Lin. Sp. Pl.* 431 ; *Willd. v. 2. p.* 80 ; *Plenck, Icon.* t. 255.

FOREIGN.—*Ognon*, Fr. ; *Cipolla*, It. ; *Cebolla*, Sp. ; *Swiebel*, Ger. ; *Pecāj*, Hind.

THE common Onion is a biennial plant, too well known by its fistular leaves, swelling stalk, and bulbous root, to require a particular description. Neither the native country of the plant, nor

the date of its introduction, are known. The bulb is globose, simple, and formed of concentric circles. The stem is naked, swelling at the base, with smooth tubular spreading pointed leaves sheathing at the base. The flowers appear in a close head or capital, in June and July.

The principal varieties in cultivation are the Strasburgh, or common oval; the Spanish, silver skinned, and red skinned; the globe onion, the Reading, and the Portugal. The *tree onion*, which is figured and described in the "Botanical Magazine," t. 1469, as a variety of the *Allium cepa* is cultivated in some gardens. The *scallion* is another variety of *A. cepa*, distinguished by the circumstance of its never forming a bulb at the root. Miller states, that the scallion is propagated by parting the roots in autumn; that it grows in almost any soil or situation, and resists our severest winters. He adds, that being green and fit for use very early in the spring, it is worthy of a place in all kitchen gardens. It was, indeed, formerly much in use; but the true scallion is very little known; and is said to exist only in a few gardens, where it is preserved by way of curiosity. The Egyptian onion, or Ground onion, has been considered another variety of *Allium cepa*, but according to Mr. Neill is more nearly allied to the *A. fistulosum*. Instead of producing bulbs at the top of the stem, like the former, this plant produces clusters at the surface of the ground in the manner of potatoes. It was brought from Egypt, it is believed, during the occupation of that country by the British army, and was first cultivated in the neighbourhood of Edinburgh in 1811, by Lieut. Burn of the Royal Navy. In quality the ground onion seems not inferior to the common onion, and it more speedily reaches maturity, being planted in April, and reaped in August and September.

QUALITIES.—The sensible, as well as chemical qualities of the onion resemble those of garlic; but are much weaker. On distillation it yields a small portion of acrid volatile essential oil, combined with sulphur; and the recent juice contains sugar, mucus, phosphoric acid, phosphate of lime, and citrate of lime.

MEDICAL PROPERTIES AND USES.—The onion is chiefly cultivated for culinary purposes. The root affords a considerable

proportion of alimentary matter, principally mucilage, particularly when boiled ; but in dyspeptic habits it occasions flatulence, thirst, and headache. The root is the most active part, and is stimulant, diuretic, and expectorant. “ On account of the free phosphoric acid it contains, the juice is supposed to be useful in caculous cases, as it dissolves phosphate of lime out of the body. Onions are, however, scarcely ever employed, except externally, as suppurative cataplasms ; for which purpose they are generally roasted, split, and applied to tumours.”



Syrax Benzoin.

STYRAX BENZOIN.

Benzoin Storax, or Benjamin-Tree.

SPEC. CHAR. *Leaves* ovate, pointed, entire; downy beneath. *Clusters* axillary, compound.

Syn.—Arbor Benzoini, Grimm in *Eph. Acad. Nat. Curios.* dec. 2. ann. 1. 370.

Benjui, Garcias ab Horto in *Clus. Exot.* p. 155; *Sylv. in Valent. Hist. Simpl.* p. 487.

Benzuin, Radermacher in *Act. Societ. Batav.* v. 3. p. 44.

Benjamin, or Benzoin, Marden *Hist. of Sumatra*, p. 123.

Laurus Benzoin, Houttwyn in *Act. Harlem*, v. 21. p. 265.

Styrax Benzoin, Dryander in *Phil. Trans.* v. 77. 308. t. 12; *Willd.* n. 2; *Woodv.* t. 72.

FOREIGN.—Benzoin, Fr.; Belzuino, It.; Benjui, Sp.; Benzoe, Ger.; Lubán, Hind. and Arab.

THOUGH Garcias ab Horto, Grimm, and Sylvius, were acquainted with the real tree from which the resinous substance called Benzoin is collected, its botanical character was entirely unknown to modern authors till about the year 1787, when Mr. Dryander fully ascertained it to be a Styrax. This was done at the request of the late Sir Joseph Banks, who obtained proper specimen of the tree from Mr. Marsden at Sumatra, where it is a native. Ray had erroneously supposed it to be the production of a North American shrub, thence called *Laurus Benzoin*. The latter, in correcting this error, fell into a no less mistake, making the Benjamin-tree a Croton, in *Mant.* 2.294, and a *Terminalia* in the Supplement 434. To this he is supposed to have been led by the French name of this Croton or *Terminalia*, (*Bien-joint*, but he gives a better reason in justification of himself in the *Supplementum*, where he informs us that a piece of the true *Benzoe*, brought by Thunberg, very closely agreed, in its singular bark, with the tree before him, which grew in the stove at Upsal.

The Benzoin *Styrax* is of quick growth, and rises to a considerable height ; it sends off many strong, round branches, which are covered with a finely downy and hoary bark. The leaves are about four inches long and two broad, alternate, on short footstalks, quite entire, pointed, oblong, elegantly reticulated with triply compound prominent veins, smooth on the upper surface, and clothed beneath with a fine dense hoary down. The flowers are in compound axillary clusters, seldom so long as the leaves, alternately branched, with angular downy stalks, and a few small, oblong, concave, more downy, deciduous bractes. The flowers are from six to twelve in one cluster, smaller than those of *Styrax officinale*, and usually hang all upon the same side. The calyx is bell-shaped, downy, with very minute teeth ; the corolla consists of five linear obtuse petals, four times longer than the calyx, connected together at the base, externally cineritious, and somewhat silky rather than downy. The filaments are ten, shorter than the petals, inserted into the receptacles connected at the base into a tube almost as long as the calyx, and crowned with linear erect anthers. The germen is superior, ovate, and tomentose, with a slender style, and simple stigma. The fruit is similar to that of *Styrax officinale*.—Fig. (a) corolla ; (b) anthers ; (c) calyx, germen, and style.

In some of the northern parts of Sumatra, particularly near the sea coast, there are several extensive plantations of these trees. The fruit being sown in the rice fields, spring up, and the young plants require only that the surrounding shrubs should be cleared away from them. When the trees have attained the age of six or seven years, incisions are made in the bark, from which the balsam exudes in the form of a thick, whitish, resinous juice. By exposure to the air, this juice soon hardens ; it is then pared from the bark with a knife or chisel. For the first three years the trees yield the purest resin : this is of a white colour, inclining to yellow, is soft and fragrant. Afterwards, for the next seven or eight years, an inferior sort is yielded ; this is of a reddish yellow colour, degenerating to brown. At length the trees, unable to bear a repetition of the process, are cut down, and split into pieces. From these is pro-

cured, by scraping, a still worse sort of benzoin, which is dark-coloured, hard, and mixed more or less with parings of the wood and other impurities.

The inferior sorts of benzoin are exported to Arabia, Persia, and some parts of India, where they are burned, to perfume, with their smoke, the temples and houses of the inhabitants; to expel troublesome insects, and obviate the pernicious effects of unwholesome air or noxious exhalations.

Benzoin is brought for sale to the mercantile parts of Sumatra, in large cakes, covered with mats. In order to pack it in chests, it is necessary to break these cakes, and to expose the benzoin to the heat of the sun. The greater part which is brought to England is re-exported to countries where the Roman Catholic and Mahomedan heresies prevail; to be there burned in the churches and temples. The annual exportation of benzoin from London to Magadore only has been estimated at 30,000 pounds weight per annum.

“CHEMICAL PROPERTIES.—Only three solid balsams are at present known; viz. *Storax*, *Dragon's blood*, and *Benzoin*. *Benzoin* has a very agreeable odour, which is increased by heat. It has little taste. Its specific gravity is 1.092. This substance has been used in medicine for ages, and various processes have been pointed out by chemists for extracting benzoic acid from it: but the only person who has examined its properties in detail is Mr. Brande.

“Cold water has very little effect on benzoin, but boiling water takes up a portion of benzoic acid.

“Alcohol dissolves it when assisted by a gentle heat, and forms a deep yellow solution inclining to reddish-brown. When this solution is diluted with water, the benzoin precipitates in the form of a white powder. It is precipitated also by muriatic and acetic acids, but not by the alkalies. A few drops of sulphuric acid likewise precipitate the benzoin; but an additional quantity redissolves it, and forms a liquid of the colour of port wine. When equal quantities of the alcoholic solution of benzoin and sulphuric acid are mixed, a dark-pink precipitate falls. The liquid assumes a pink colour, which becomes lilac when diluted with water. Nitric acid occasions a strong effervescence, and forms a dark-red fluid with the alcoholic solution, but throws down no precipitate.

“Ether dissolves benzoin with facility, and the solution with reagents exhibits the same phenomena as the alcoholic.

“Nitric acid acts with violence on benzoin, and converts it into an orange coloured mass. When assisted by heat the acid dissolves the benzoin; and as the solution cools, crystals of benzoic acid gradually separate. Mr. Hatchett ascertained that by this process a quantity of artificial tannin is formed.

“ Sulphuric acid dissolves benzoin, while benzoic acid as Hatchett discovered, sublimes; the solution is at first a deep red. By continuing the digestion, a portion of artificial tannin is formed, and the charcoal evolved amounts to 0.48 of the benzoin dissolved.

“ Acetic acid dissolves benzoin without the assistance of heat. When heat is applied, the solution, as it cools, becomes turbid, owing to the separation of benzoic acid.

“ Benzoin is dissolved by a boiling lixivium of the fixed alkalies; a dark-brown solution is formed, which becomes turbid after some days' exposure to the air. Ammonia likewise dissolves benzoin sparingly.

“ When Mr. Brande exposed 100 grains of benzoin in a retort to a heat gradually raised to redness, the products were,

Benzoic acid	. . . . .	9.0
Acidulous water	. . . . .	5.5
Butyraceous and empyreumatic oil	. . . . .	60.0
Charcoal	. . . . .	22.0
Carburetted hydrogen and carbonic acid	. . . . .	3.5

100.0

“ Bucholz subjected 1500 grains of benzoin to a chemical analysis. He obtained the following substances:

Resin	. . . . .	1250
Benzoic acid	. . . . .	187
Substance similar to balsam of Peru	. . . . .	25
Aromatic substance soluble in water and alcohol	. . . . .	8
Woody fibres and impurities	. . . . .	30

1500

“ *Benzoic acid*.—This substance was described as long ago as 1608, by Blaise de Vigenere, in his Treatise on fire and salt, under a name by which it is familiarly known, viz. *Flowers of Benzoin* or *Benjamin*.

“ The usual method of obtaining this acid is to put a quantity of benzoin, coarsely powdered, into an earthen pot, to cover the mouth of the pot with a cone of thick paper, and then to apply a very moderate sand heat. The benzoic acid is sublimed, and attaches itself to the paper. This method was tedious and difficult; it being hardly possible to prevent the heat from scorching the benzoin, and volatilizing some empyreumatic oil, which soils and injures the acid sublimed. Neuman proposed moistening the benzoin with alcohol, and distilling it in a retort with a slow heat. The acid comes over immediately after the alcohol, partly in crystals, and partly of the consistence of butter. Geoffroy ascertained, in 1738, that this acid may be obtained by digesting benzoin in hot water. A portion is taken up, which is deposited in crystals as the water cools. Scheele published a different method in 1775; which being easier and more productive than any of the preceding, is now preferred. This process is as follows: Upon four parts of unslacked lime pour twelve parts of water, and after the ebullition is over add 96 parts more of water; then put twelve parts of finely pounded benzoin into a tinned pan; pour upon it first, about six parts of the above milk of lime, mix them well together, and thus

successively add the rest of the mixture of lime and water. If it be poured in all at once, the benzoin, instead of mixing with it, will coagulate, and run together into a mass. This mixture ought to be boiled over a gentle fire for half an hour with constant agitation; then take it from the fire, let it stand quiet for an hour, in order that it may settle; pour off the supernatant limpid liquor into a glass vessel. Upon the remainder in the pan pour 96 parts of pure water; boil them together for half an hour, then take it from the fire, and let it settle; add the supernatant liquor to the former; pour upon the residuum some more water, boil it as aforesaid, and repeat the same process once more. At last put all the residuums upon a filtre, and pour hot water several times upon them. During this process, the calcareous earth combines with the acid of benzoin, and separates it from the resinous particles of this substance. A small quantity of the resin is dissolved by the lime-water, whence it acquires a yellow colour. All these clear yellow leys and decoctions are to be mixed together, and boiled down to twenty-four parts, which are then to be strained into another glass vessel.

“After they are grown cold, muriatic acid is to be added, with constant stirring, till there be no farther precipitation, or till the mass taste a little sourish. The benzoic acid, which was before held in solution by the lime, precipitates in the form of a fine powder.

“Mr. Hatchett has observed, that when benzoin is digested in sulphuric acid, a great quantity of beautifully crystallized benzoic acid is sublimed. This process is the simplest of all, and yields the acid in a state of purity; it claims, therefore the attention of manufacturers.

“Benzoic acid, thus obtained, is a fine light whitish powder, which is not brittle, but has rather a kind of ductility. Its taste is sweet, hot, and somewhat bitter. Its odour is slight, but peculiar and aromatic. Its specific gravity is 0.657. It hardly affects the infusion of violets, but it reddens that of turnsole, especially when hot.

“Heat volatilizes this acid, and makes it give out a strong odour, which excites coughing. When exposed to the heat of the blow-pipe in a silver spoon, it melts, becomes as fluid as water, and evaporates without taking fire. It only burns when in contact with flame, and then it leaves no residuum behind. When thrown upon burning coals, it rises in a white smoke. When allowed to cool after being melted, it hardens, and a radiated crust forms on its surface. When distilled in close vessels, the greater part of it sublimes unaltered, but some of it is decomposed. This portion is converted almost entirely into oil and carburetted hydrogen gas.

“This acid is not altered by exposure to the air. Two hundred parts of cold water dissolve 1 part of it; but 1 part of it dissolves in $24\frac{1}{2}$ parts of boiling water.

“Neither the simple supporters nor combustibles have any sensible action on it at the common temperature of the air, as far as is known. But very few experiments have been made on the subject.

“It combines with alkalies, earths, and metallic oxides, and forms salts known by the name of *benzoates*. The alkaline benzoates are soluble in water. So are the benzoates of barytes, strontian, and magnesia. Those of alumina, yttria, and lime, are but sparingly solu-

ble. The only metallic salts which form insoluble precipitates when mixed with benzoate of ammonia are those of tellurium, mercury, and iron. Tellurium and mercury are precipitated white; iron orange. Berzelius has proposed benzoate of ammonia as an excellent agent for precipitating iron and separating it from other bodies with which it may be united. From the experiments of Hisinger the method appears to be a good one, provided the iron be in the state of peroxide and the liquid contain no excess of acid.

“ Concentrated sulphuric acid dissolves benzoic acid without heat, or any other change, except becoming somewhat brown: when water is poured into the solution, the benzoic acid separates, and coagulates on the surface without any alteration. Nitric acid presents precisely the same phenomena, as does also the sulphurous acid. Neither the muriatic, nor the phosphoric acids dissolve it. Acetic acid, when hot, dissolves it precisely as water does; but it crystallizes again when the acid cools.

“ Alcohol dissolves it copiously, and lets it fall on the addition of water. Boiling alcohol takes up its own weight. One hundred parts of cold alcohol dissolve scarcely 56 parts of benzoic acid.

“ This acid is sometimes used as a medicine, but much less frequently than formerly.

“ Benzoic acid has been analysed with much accuracy by Berzelius. According to his experiments, it is a compound of

Hydrogen	. . .	5.16 or 6 atoms	=	0.75
Carbon	. . .	74.41 15	=	11.25
Oxygen	. . .	20.43 3	=	3.00
				15.00

“ According to this analysis it contains 24 atoms, and an integrant particle of it weighs 15. The constitution of benzoate of lead agrees very well with this determination. According to the analysis of Berzelius, it is composed of

Benzoic acid	. . . . .	100 . . .	14.893
Yellow oxide of lead	. . . . .	94 . . .	14

The equivalent for benzoic acid according to this salt is 14.893, which does not differ 1 per cent. from the number obtained by the analysis of the acid itself.

“ Chemists had long suspected that an acid could be obtained from tallow, on account of the acrid nature of the fumes which it emits at a high temperature; but it was M. Grutzmacher who first treated of it particularly, in a dissertation *De Ossium Medulla*, published in 1748. Mr. Rhades mentioned it in 1753: Segner published a dissertation on it in 1754; and Crell examined its properties very fully in two dissertations published in the Philosophical Transactions for 1780 and 1782. It was called at first *acid of fat*, and afterwards *sebacic acid*.

“ But at the period when these chemists made their experiments, the characteristic properties of the different acids were not sufficiently known to enable them to distinguish acids from each other with precision. Thenard examined the subject in 1801, tried all the processes of Crell and Guyton Morveau, and found that the acids procured by them were either acetic or the acid employed in the process. Thenard found

however, that a peculiar acid was formed during the distillation of tallow. To it he consigned the appellation of *sebacic acid*. The experiments of this chemist were repeated in 1804 by Mr. Rose, who obtained similar results, and confirmed all the observations of the French philosopher. The subject soon after was resumed by Berzelius, who in an elaborate dissertation, published in 1806, proved that the sebacic acid of Thenard is nothing else than benzoic acid contaminated with some unknown substance derived from the fat, which alters some of its properties, but from which it may be freed by proper precautions. There does not therefore exist, as far as we know at present, any acid to which the name of sebacic acid belongs."

Benzoic acid has been also found in the urine, particularly when there is a deficiency of phosphoric acid in it. Fourcroy and Vauquelin state that it exists always in the urine of gramivorous animals; but this has been denied by M. Giese. When it exists in the animal kingdom it is usually in combination with potash or lime.

MEDICAL PROPERTIES AND USES.—This balsam was formerly considered to be expectorant, and was esteemed for its virtues in asthma and other pulmonary affections: it is now, however, justly discarded from practice, and is merely valued in medicine as yielding the *benzoic acid*, which is somewhat stimulating, and imparts a very pleasant flavour.

Benzoin is also used in the preparation of what is called *court plaster*, which it sometimes renders too irritating. The mode of making it, is as follows:—Five ounces of isinglass are dissolved in a pint of water. A quantity of thin black sarcenet being stretched on a frame, this solution is applied warm with a brush equally over the surface; and, when dry, this process is repeated a second or third time. It is finally brushed over with a weak solution of benzoin in spirits of wine, which communicates to it a pleasant aromatic smell.

Benzoin also enters into the composition of the following preparations:—

1. *Fumigating Pastilles.*

Take of Benzoin, 1 drachm.

Cascarilla bark, $\frac{1}{2}$ drachm.

Myrrh, 1 scruple.

Oil of nutmegs }
Oil of cloves } of each, 10 drops.

Nitrate of potass, $\frac{1}{2}$ drachm.

Charcoal, 6 drachms.

Mucilage of gum tragacanth, as much as may be required, to

cause the mass to adhere; after which it is to be divided and put into the usual form.

The French method of preparing pastilles :—

“ Prenez, Benjoin	16 parts.
Baume du Pérou sec	16
Qu’on a fait préalablement dans l’eau pour enlever tout l’acide volatil.	
Santal citrin	4
Laudanum	1
Charbon de tilleul	96
Nitrate de potasse	2

“ Reduisez toutes ces substances en poudre tres-fine, melez-les exactement, et faites-en, avec du mucilage de gomme adraganthe, une masse épaisse, dont vous formerez des cônes échancrés en trépied à la base, que vous ferez sécher dans un four faiblement chauffé.”

2. *Virgin’s Milk*.—A spirituous solution of benzoin mixed with about 20 parts of rose water, forms a well known cosmetic. Goulard water is also sometimes sold under this title.

3. *Friar’s Balsam, Wade’s Drops, Jesuit’s Drops*.—These preparations are nothing more than the compound tincture of benjamin.

4. *Pectoral Balsam of Honey*.—This is merely a simple tincture of benzoin, or of tolu, and like the following, is highly stimulant and improper for those diseases for which they are commended by their knavish proprietors.

5. *Essence of Coltsfoot*, consists of equal parts of balsam of tolu, and the compound tincture of benzoin, to which is added double the quantity of rectified spirits of wine. It is recommended for coughs and consumptions!!

Riga Balsam.—Take of alcohol or rectified spirit, eight ounces; compound tincture of benzoin, two drachms; tincture of saffron, one drachm: mix. A popular nostrum for sprains and bruises; recommended also as a *vulnerary*!

OFF. PREP.—Acidum Benzoicum. *L. E. D.*

Tinct. Benzoini composita. *L. E. D.*



Triticum hybernium

Saccharum cereale

Ergot or Spurred Rye

CXIII

TRITICUM HYBERNUM.

Winter, or Lammas Wheat.

Class III. TRIANDRIA.—Order II. DIGYNIA.

Nat. Ord. GRAMINA.

GEN. CHAR. *Calyx* of 2 transverse, opposite valves, solitary, many-flowered.

SPEC. CHAR. *Calyx* four-flowered, tumid, smooth, imbricated, with little or no awns.

Syn.—*Triticum spicâ muticâ*, *Ger. Em.* 65. *f.* 1; *Park. Theatr.* 1120. *f.* 1.

Siligo spicâ muticâ, *Lob. Ic.* 25.

Triticum hybernum aristis carens, *Bauh. Pin.* 21; *Mor. Hist.* 3. *t.* 11. *f.* 1.

Tourn. Inst. t. 29.

Triticum vulgare, *Host. Gram. Austr.* v. 3. 18. *t.* 26.

Triticum hybernum, *Lin. Sp. Pl.* 126; *Willd.* v. 1. 477; *Errh. Pl. Offic. n.*

151; *Ait. Kew.* v. 2. *ed.* 2. *p.* 180.

THE native country of this valuable grain, which now constitutes the chief food of the inhabitants of this and other European nations, is entirely unknown. It has, however, been conjectured from the nature and habits of wheat, that it may have come originally from the hilly parts of Asia, and has been rendered hardy by time and cultivation, in this, and most parts of the world. Under the equator, wheat will seldom form an ear below the elevation of 4,500 feet, or ripen above that of 10,800; and it will not vegetate beyond the 62° of northern latitude. The English counties most distinguished for the quantity, as well as the quality, of their wheat, are Kent, Essex, Suffolk, Rutland, Herefordshire, Berkshire, Hampshire, and Hertfordshire. In the more northern parts of the island, this grain is of inferior quality, being cold to the feel, dark coloured, and yielding comparatively little flour. In the best wheat counties, and in good years, the weight of a bushel of wheat, eight gallons to the bushel, is said to be from sixty to sixty-two pounds. In the isle of Sheppy, in Kent (where, perhaps, the best samples of

wheat sent to the London market are produced,) this grain, in some favourable seasons, weighs sixty-four pounds the bushel. Where the climate is naturally colder, wetter, and more backward, or in bad seasons, the weight of the bushel of wheat is not more than fifty-six or fifty-seven pounds. The kinds of wheat cultivated by the farmer are numerous; but the species here figured, is sown in autumn, stands the winter, and ripens its seed in the following summer. Of all the varieties this is the most generally cultivated in this country, as being the most suited to the nature and quality of the soil, and as affording the finest kind of flour. The soils best adapted to the growth of this grain are rich clays and heavy loams.

The root consists of many downy fibres. The stems are jointed, from three to four feet high, straight, smooth, and terminated by a longish ear or spike. The leaves are linear, smooth, pale green, sheathing, and jointed. The spike is three or four inches long, inclining, and composed of numerous imbricate, oblong, ovate, 2-ranked spikelets; the calyx consists of two concave, oblong, keeled, smooth, nearly equal valves; the outer ones near the top generally terminated by very short awns, which distinguishes it from spring wheat (*Triticum æstivum*,) which has awns three inches long; they contain for the most part from three to four florets, three of which are usually productive; the outer valve of the corolla is concave and pointed, the inner one flat, 2-toothed, and blunt; the filaments are capillary, bearing linear, forked anthers: the germen is turbinate, with a short style, and feathery stigmas. The seed or grain is ovate, translucent, with a narrow channel along the upper side, and enveloped in the corolla.—Fig. (a) represents a spicula of the *T. hybernum* of its natural size; (b) the germen and calyx; (c) a flower expanded and considerably magnified.*

* A common indigenous perennial grass, belonging to the present genus, vulgarly denominated couch-grass, or creeping wheat-grass, (*Triticum repens*) formerly occupied a place in our Dispensatories, under the name of *Gramen caninum*. Its long creeping roots, which so greatly facilitate the propagation of this grass, to the no small inconvenience of the farmer, have a sweetish taste, and are said to be mildly aperient, deobstruent, and diuretic. The expressed juice taken in considerable quantities, and frequently repeated, is strongly recommended by Boerhaave, and also by Bergius, for its singular efficacy in removing obstructions, and scirrhus affections of the liver.

QUALITIES AND CHEMICAL PROPERTIES.—Of all the varieties of wheat cultivated in this country, that which is known by the name of the *White Dantzic* is said to be the best, and yields a larger proportion of flour than any other. After the operation of grinding, the flour, or farinaceous matter, is separated from the bran by sifting or bolting. It is inodorous, and nearly insipid. Water, with which it has been macerated, becomes milky or turbid; according to Dr. Thomson, it affords precipitates with infusion of galls and the strong acids, and rapidly becomes sour. If wheat-flour be made into a paste, and washed in a large quantity of water, it is separated into three distinct substances; a *mucilaginous saccharine* matter, which is readily dissolved in the liquor, and may be separated from it by evaporation; *starch*, which is suspended in the fluid, and subsides to the bottom by repose; and *gluten*, which remains in the hand, and is tenacious, very ductile, somewhat elastic, and of a brown-grey colour. The first of these substances does not essentially differ from other saccharine mucilages. The second, namely, the starch, is particularly distinguished by its insolubility in cold water, but forms a transparent and gelatinous mass with that fluid when hot. M. Vauquelin found, that the flour which is used in Paris, consists of 72.8 parts of starch, 10.2 of gluten, 10 of water, 2.8 of a gummy kind of matter, and 4.2 of a sweet substance. Flour, kneaded with water, forms a tough, indigestible paste; but when a small portion of leaven or yeast, is added to the mass, it undergoes the panary fermentation, and produces bread, a small quantity of salt being added to give it sapidity. During the process, a large quantity of carbonic acid is evolved, but remains confined by the mass, in which it is expanded by the heat in baking, and thus raises the dough. This is the cause of the porosity or sponginess of well baked bread. “When flour has been long kept, it becomes musty, and undergoes the putrefactive fermentation, in which state the bread made with it is very unwholesome. Flour is fit for making bread only when all its constituents are entire; and as gluten is the most susceptible of decomposition among them, the ascertaining its presence is a proof of the goodness of the flour. M. Taddei has taught us that guaiac is a test of the presence of gluten, by striking with it a beautiful blue colour; flour, therefore, which exhibits this colour when rubbed with guaiac and a few drops of vinegar, may be pronounced good.*

Bread purchased of the common baker is often unwholesome; it is generally highly fermented for the purpose of increasing its bulk; and it is almost constantly too little baked, lest it should decrease in weight; added to this, it is not always certain that the flour is free from pernicious adulteration. Mr. Accum, in his *Treatise on Culinary Poisons*, informs us, that the inferior kind of flour which the London bakers generally use for making loaves, requires the addition of alum to give them the white appearance of bread made from fine flour. The baker's flour is very often made of the worst kinds of damaged foreign wheat, and other cereal grains, mixed with them in

* *London Dispensatory*, p. 540.

grinding the wheat into flour. The smallest quantity of alum that can be employed with effect to produce a white, light, and porous bread from an inferior kind of flour, he states to be from three to four ounces to a sack of flour weighing 240 lbs. "Another substance," continues Mr. Accum, "employed by fraudulent bakers, is subcarbonate of ammonia. With this salt they realise the important consideration of producing light and porous bread from spoiled, or what is technically called *sour flour*. This salt, which becomes wholly converted into a gaseous substance during the operation of baking, causes the dough to swell up into air bubbles, which carry before them the stiff dough, and thus renders the dough porous; the salt itself is at the same time totally volatilized during the operation of baking." Potatoes are likewise, and perhaps constantly used by fraudulent bakers, as a cheap ingredient, to enhance their profit; and there are instances of conviction on record, of bakers having used gypsum, chalk, and pipe-clay, in the manufacture of bread.

Although the flour of wheat is better adapted for the purpose of making bread than any other kind of flour, there are many other farinaceous vegetables, from the seeds or roots of which salutary and pleasant bread can be prepared. Oaten bread is common, not only throughout Scotland, but likewise in Lancashire, and several of the northern counties of England. In many parts of the former country bread is frequently made of barley meal, and pease meal; but the latter is dry, heavy, and difficult of digestion. In times of scarcity many attempts have been made to compensate for the want of corn, by the substitution of other vegetable substances, in the fabrication of bread. For this purpose recourse has been had to the herb *ragwort*, the thick root of which, when dried and ground, yields a fine flour, which is said to be easily digested and more nutritive than wheaten bread. The same properties and effects are attributed to radishes. From the acorn also a kind of meal is produced, which is said to make excellent bread, provided a little barley meal be mingled with it, to counteract its astringent qualities. In the wars of Westphalia, bread of this description was commonly used; and when made with milk was extremely pleasant and nutritious. The slightest preparation is sufficient to remove the harsh and disagreeable taste which the acorn has in its natural state. Roasting or boiling is all that is requisite to render it palatable. The acorns that are best calculated for this purpose are those of the white oak. A very good bread may be made of turnips boiled, and mixed with an equal quantity in weight of coarse wheat flour. Millet is sometimes used for the same purpose; and rice is converted by the Americans into a light, wholesome, and pleasant bread. Potatoes, mixed in various quantities with flour, make a wholesome, nutritive, and agreeable bread. M. Parmentier recommends the mixture of potatoes, in time of scarcity, with the flour of wheat, in preference to rye, barley, or oats; when no grain can be procured, he recommends the use of bread made from a mixture of the amylaceous powder of potatoes and their pulp, fermented with leaven and honey. Parmentier made bread very much resembling that of wheat, by mixing four ounces of amylaceous powder of potatoes, one drachm of mucilage extracted from barley, one drachm of the bran of rye, and half a drachm of glutinous matter, dried and powdered.

In the absence of any of the farinaeous vegetables which we have mentioned, various substitutes for bread have been employed in different parts of the world. By far the most valuable of these is the fruit of the Bread Tree, (*Artocarpus incisa*), which grows abundantly in the South Sea islands. The fruit is about the size of a child's head, covered with a thick tough rind. When used instead of bread, it is roasted either whole, or cut into three or four pieces. In Iceland, Lapland, and other northern countries a kind of bread is made of dried fish, beaten first into powder, and then made up into cakes. In the lordship of Moscow, in upper Lusatia, a kind of white earth is found, of which the poor, in times of famine, have been compelled to make bread. Baron Humboldt informs us, that there are savages on the Oroonoko, who receive into the stomach large portions of potters clay; and in the western parts of Louisiana, the savage inhabitants are accustomed to eat great quantities of steatite, mixed with salt.

Starch. Wheat contains a larger portion of starch than any other substance; but it is also obtained from other vegetable substances, particularly tuberos roots, in which it exists apparently in a state of mechanical mixture. They are rasped or pounded, and diffused through a large quantity of cold water; the fibrous parts are removed after they have been well washed, while the starch is mechanically suspended by the water and falls to the bottom. The potato contains about one-third of its weight of starch, and this is the substance from which it is usually prepared; but most vegetable substances yield more or less starch, when treated in the same manner as the potato-root. *Arrow-root* is merely a variety of starch, which is obtained by an analogous process from the root of the *Maranta arundinacea*, a plant which is cultivated to a great extent in the West Indies. *Sago* is prepared in the same manner from the pith of various species of palms, and *ta-pioca* and *cassava*, are obtained from the *Iatropa manihot*, a South American plant. The substance commonly called *salep*, is also another variety of starch and is prepared from the bulbs of the *Orchis mascula*.

Starch is a white, insipid substance; insoluble in ether, alcohol, and cold water, but forms a jelly with hot water. Alcohol, infusion of galls, the acetate and nitrate of lead, and some other metallic salts, precipitate it from its watery solution. Both acids and alkalis combined with water dissolve it. The strong acids decompose it, especially the sulphuric and nitric acids; the latter converting it into malic and oxalic acids. If starch be digested in twice its weight of water, and 1-50th part of sulphuric acid, renewing the water gradually as it is evaporated, and stirring it occasionally, it is almost entirely converted into sugar. When exposed to a moderate heat it begins to swell, and is gradually changed into a brownish substance, which is used in calico printing, and commonly called *British gum*. According to M. M. Gay Lussac and Thenard, 100 parts of starch consist of 49.68 parts of oxygen, 6.77 of hydrogen, and 43.55 of carbon. The most delicate test of starch is iodine, which renders its solution in water, even when largely diluted, of a fine blue colour.

Gluten. This is obtained, as already observed, by forming wheat-flour into a paste, and washing it repeatedly with cold water. It is a tough, elastic, fibrous substance of a greyish colour, and when dried

semi-transparent, and much resembling glue. It has scarcely any taste, and bears a considerable affinity, both in its composition and properties, to the peculiar animal principle of the same name: it is dissolved by the acids and alkalies; the strong acids, decomposing it at the same time.

Signor Taddei, an Italian chemist, has lately ascertained that the gluten of wheat may be resolved into two distinct proximate principles, which he has distinguished by the names *gliadine*, (from γλια, gluten,) and *zimome* (from ζυμη, ferment.) They are obtained by kneading newly prepared gluten in successive portions of alcohol, until it is no longer rendered milky by the addition of water. The alcoholic solution being allowed to evaporate spontaneously, a small portion of gluten is at first deposited, and the gliadine remains behind of the consistence of honey, and mixed with a little yellow resinous matter, from which it may be freed by digestion in sulphuric ether. The portion of the gluten not dissolved by the alcohol is the zimome. Gluten appears to be one of the most nutritive of vegetable substances, and wheat seems to owe its superiority to all other grains from its containing it in larger quantities.

MEDICAL PROPERTIES AND USES.—Medicinally, bread is employed to form emollient poultices; and is frequently the medium for those active medicines which are given in very minute proportions, in the form of pills. Toasted and infused in water it forms a grateful beverage for the parched mouth in fever; and is, or should be, the common drink of the dyspeptic. A solution of starch has been occasionally recommended as a demulcent for irritation of the fauces; but is now commonly used for injections when the rectum has been irritated or abraded by the passage of bile, or any of the acrid poisons.

OFF. PREP.—Mucilago Amyli. L. E. D. Pulvis Tragacanthæ Comp.

SECALE CEREALE.—*Cultivated Rye*.—Plate 113.

GEN. CHAR. *Calyx* of 2 valves, solitary, 2-flowered, on a toothed, elongated receptacle.

SPEC. CHAR. *Glumes* of the *calyx* bordered with minute parallel teeth.

Syn.—Secale, *Ger. Em.* 68; *Matth. Valgr.* v. 364; *Camer. Epit.* 190.

Secale cereale, *Lin. Sp. Pl.* 124; *Willd. n.* 1.; *Pursh. v.* 1. 90; *Hort. Gram. Austr. v. t.* 28.

FOREIGN.—*Seigle*, Fr.; *Segale*, It.; *Centeno*, Sp.; *Roggen*, Ger.; *Rag*, Swed.; *Rog*, Dut.; *Rosch*, Russ.

To render our illustration of Medical Botany as complete as possible, we judge it indispensable to give an original figure

of the present species, and the diseased rye or **ERGOT**. Rye we need scarcely observe, is a culmiferous plant, much more generally cultivated in Britain in ancient than in modern times; being only partially used in certain districts for making bread, or in the distillation of spirits. Its native country is unknown; but Mr. Pursh says, it frequently occurs, apparently wild, in North America; flowering in June. The root is fibrous and annual; the stem is jointed, slightly branched at the bottom, smooth; the leaves linear, glaucous, rough towards the apex; spike terminal, solitary, erect, three or four inches long; glume containing two flowers, and consisting of two opposite, oblong, pointed valves, smaller than the corolla; florets sessile; corolla of two valves, the outermost ending in a long straight, rough awn, four or five times the length of the glumes; filaments three, hanging out of the flower, with oblong, forked anthers; germen tarubinate; styles two, reflexed; stigmas cylindrical, feathery; seed solitary, oblong, somewhat cylindrical, naked.

POISONOUS EFFECTS OF ERGOT.—Most of the knowledge, says Dr. John Thomson, which we at present possess respecting *chronic* or *dry gangrene* has been obtained from watching the progress of the disease produced by eating *unsound rye*. This disease has seldom or never been observed in England, but is endemical in some districts in France, in which rye forms the principal food of the inhabitants. It occurs only, however, in those districts after very rainy or moist seasons; seasons in which that grain is liable to be affected with the particular disease, well known in France by the name of *ergot*, or the *cock-spur in rye*. Few seasons pass without the rye containing more or less vitiated grain; but in those years it is produced in such quantities as to form nearly one-fourth of the whole produce. It is in those seasons in which the ergot is most abundant that the mortification makes its appearance, and it has from this circumstance been naturally inferred, that this disease in the rye was the cause of the mortification.

The attention of the public was first called to this disease, in a particular manner, by M. Dodard, by a letter inserted in the *Journal des Savans* for the year 1676. In this letter he mentions, that it had been long known that those who made use of rye bread, containing much of this corrupted grain, were liable to be affected in their extremities by a gangrene, attended usually with but little fever, inflammation, or pain, but during which the use of the limb affected was destroyed, or the limb itself became dead, and separated from the body. The part affected became at first insensible and cold, and in the progress of the disorder, dry, hard, and withered. In very malignant cases M. Dodard mentions, that this mortification was attended with a greater or less degree of delirium. The account which this author gives of the symptoms and progress of this disease is evidently imperfect, and the only fact stated in his relation, which seemed decidedly to prove that the mortification was owing to the use of corrupted rye was, that the grain proves fatal to fowls that are fed with it. M. Saviard mentions having seen this distemper in the year 1694, at the Hotel Dieu of Orleans, when he had to perform some original operations. He contents himself with observing, that it is very frequent in Sologne; that it attacks those who eat rye affected with the cock-spur; and

that the upper and lower extremities of the patients, whom he saw, grew during the progress of this affection, as dry as touchwood, and as emaciated as Egyptian mummies.

In the year 1710 several accounts of this disease were transmitted to the Royal Academy of Sciences at Paris, by gentlemen practising physic and surgery in the districts in which it was known that season to have prevailed. In particular M. Noel, surgeon to the Hotel Dieu at Orleans, mentioned to the secretary, that about thirty people, men and children, affected with a dry, black, and livid gangrene had come that season into the hospital; that this affection always began in the toes, and extended itself gradually along the foot and leg, till it sometimes rose to the upper part of the thigh; and what is a singular observation, and one peculiar to himself, that he had not seen any female afflicted with this distemper, and had only in one case seen it affect the upper extremities. In some patients the gangrened part came away of its own accord; in others it became necessary to use scarifications and other topical remedies. In four or five instances death succeeded to amputation, because, notwithstanding the performance of that operation, the disease continued to extend to the trunk.

The history of one case was communicated to the Academy, in which the lower extremities were separated from the body, in the articulation of the heads of the thigh bones with the *acetabulum*. The example of this and of other cases in which these cavities were in the process of the cure filled up with new and sound flesh, is what probably suggested the operation of amputation at the hip joint.

It is particularly mentioned in this report, that this gangrene attacks only the poor and ill fed of the districts in which it occurs. The rye of Sologne, in the year 1709, contained, according to the relation of M. Noel, fully one-fourth of the cock-spur; and the poor had taken no pains to separate it from the good grain with which it was mixed. The same M. Noel, in a letter which he addressed many years afterwards to M. Quesnai, seems to be of opinion, that the diseased rye lost its malignant quality after a certain time; this period he limited to two or three months; but this opinion is not exactly confirmed by subsequent observations. During the thirty-three years in which M. Noel had been surgeon to the Hotel Dieu of Orleans, that distemper had appeared three or four times, and always in those rainy seasons in which rye contained a large proportion of the cock-spur. The disease in his patients had always existed for some time before those patients applied at the hospital for relief; so that he could not give any very accurate information from his own observation of the symptoms which manifested themselves; but he adds, that these unfortunate patients had often told him, that the disease generally began in one or both feet, with pain, redness, and a sensation of heat as burning as the fire; and that at the end of some days these symptoms ceased as quickly as they had come on, when the extreme sensation of heat which they formerly felt was changed into cold. "The part affected," adds M. Noel, "was black like a piece of charcoal, and as dry as if it had passed through the fire." After some time a line of separation was formed between the dead and living parts, like that which appears in the separation of a slough which has been produced by the application of the cautery, and the complete separation of the limb was, in many cases, effected by nature alone; in others he had recourse to amputation, which he found to prove sufficiently successful, unless in those patients who were very much worn out with the disease, or who had naturally very bad constitutions.

This disease appeared in Switzerland in the years 1709 and 1716; and a very accurate description of its symptoms and progress in that country has been given by Langius, a native of Lucern, in a Dissertation entitled, "*Descriptio Morborum ex usu Clavarum Secalinatorum.*"

M. Gassond, physician in Dauphiny, when this disease had appeared also in 1709, says, that many of the people were affected with swellings of

the feet, legs, hands, and arms, which degenerated into a gangrene that penetrated to the bone, and produced a separation of the affected limb; and which often required no assistance on the part of the surgeon, except to correct the deformity which it sometimes left behind. This gangrene was attended with different symptoms in different individuals; some suffered very violent pain, accompanied with insufferable heat, although the part affected felt cold to the touch. In other patients, redness, with much swelling supervened, attended by delirium and fever. Others were without these symptoms, though they seemed to suffer equal pain. In some patients the parts affected became withered, dry, and black like charcoal. The separation of the dead parts from the living took place with the most excruciating pain, and a sensation resembling that produced by the direct application of fire to the body. This sensation was sometimes intermittent, and in other instances it was succeeded by an equally harassing sensation of cold.

M. Bossau, surgeon to the hospital of St. Antoine in Dauphiny, has remarked some peculiarities in the history of this disease which are worthy of notice. This author says, that the gangrene which he had the opportunity of observing was not in every instance of the dry kind, but that the limb attacked with it sometimes became putrid, worms or maggots were generated, and a most insupportable stench exhaled; that these symptoms were not the same in every patient, but that they had this in common, that heat and cold were equally insupportable, that the disease was not communicable by infection, that it attacked indiscriminately men, women, and children, that there were now about four hundred parishes attacked with this disease, each of which contained six or more patients, and that between thirty and forty came to the Hospital, upon whom it was judged necessary to perform amputation of the arms or legs.

The degree of fatality attending the progress of this mortification in different districts appears to have been very various. M. Duhamel mentions, in the Memoirs of the Royal Academy for the year 1748, that of one hundred and twenty persons attacked, scarcely four or five had escaped with their lives. Langius mentions, that it was equally fatal in Switzerland. A calamity so serious, and recurring so often, would not fail to attract attention and stimulate the curiosity of medical men; and accordingly we find, that in France many attempts were made to discover the true source from which it proceeded. In attending to this subject it was soon observed, *that animals of every kind, except man, refused to eat rye affected with the cock-spur*; and that many of them would rather starve, than taste bread or food of any kind, into which a portion of it had, for sake of experiment, been introduced. Animals that were found to swallow it were observed to die of gangrene, which, in different animals, attacked different parts of their bodies. The observation of these facts, and the results of several trials made with the corrupted rye, seemed to leave no room for doubt with regard to the true origin of this disorder; but in the discussion of many of the questions relative to this disease, doubts began to be entertained by some, and experiments were made by a number of individuals to prove that the disease had its origin in other causes.

M. Model, a Russian apothecary, from some experiments, which are detailed in the thirteenth volume of Bomare's "Dictionnaire d'Histoire Naturelle," was led to conclude that rye, vitiated with cock-spur, does not possess the quality of exciting gangrene in animals. He fed for some time hens, pigeons, and dogs, with food containing a portion of diseased rye, without observing any injurious effects to result; and this emboldened him to try the use of it on his own person. But the quantity of this substance which M. Model administered, or which he took himself, was greatly inferior to what the people, inhabiting the countries where the disease prevails, consume of corrupted rye in ordinary years, without being at all injured by it. His opinion, however, having been eagerly adopted by some men of great reputation in France, such as Parmentier, Schlegel, and Tillet, it became necessary to

bring its truth to the test of a fair trial, and to make such experiments upon this subject as should leave no further room for doubt or uncertainty. The Royal Society of Medicine in Paris employed M. Tessier to go into the countries where this gangrene prevailed, to collect a sufficient quantity of the cock-spur rye, and to institute such experiments as seemed best calculated to determine so important a point. The result of M. Tessier's observations and experiments are to be found in two Memoirs, inserted into the two first volumes of the Memoirs of the Society by which he was deputed. The first contains an account of all the facts which he could learn respecting the production of the cock-spur in rye; and the second an account of the results which he obtained, by feeding a number of animals with that substance. Some of those results are sufficiently curious to be deserving of particular attention. M. Tessier had learned in Sologne, and in the other districts of France, where this species of gangrene appears, that the inhabitants often eat rye with impunity for three or four months together, one fourth-part of which consists of cock-spur; and this fact served him as a guide in judging of the quantity that would be necessary to mix with the food of animals, which he had chosen for the subject of his experiments.

This first experiment was made on two wild ducks, male and female. He fed them with food containing one-seventeenth part of corrupted rye, and increased the corrupted rye till it formed one-ninth. At the end of the fifth day, drops of a very black coloured fluid were seen to ooze from the nostrils of the duck. By this time she had taken about an ounce and two drachms of cock-spur rye. The tongue had become yellow, swollen, and flabby. The beak became first brown, and then black, particularly towards the root. The skin covering it swelled and became cold, as well as the tongue, the point of which became also pale and sphacelated. The parts affected began to emit a bad smell, and the bird died between the ninth and tenth day of the experiment. During that period it had taken an ounce and seven drachms of ergot.

The drake was not sensibly affected before the eighth day, nor till it had taken eleven drachms of the poison. In this bird the tongue did not sphacellate, but the other symptoms were nearly the same as in the duck. Death took place on the fourteenth day, after two ounces and six drachms had been taken. On dissection, no marks of gangrene or inflammation could be discovered in the course of the alimentary canal.

The third experiment was on a turkey hen. She was seized with vertigo; her head assumed a violet colour, and the nostrils emitted a reddish coloured liquor. A diarrhæa came on, and she died on the twenty-second day. Marks of inflammation and gangrene were found in different parts of the alimentary canal. Gangrene had also attacked different parts of the body.

Experiments on pigs led also to results of a similar nature.

These experiments appearing to be sufficient to establish the injurious effects of the cock-spur rye, when used as an article of food, M. Tessier made a number of curious experiments to ascertain the degrees of aversion which animals show for this substance, either alone, or mixed with the substances with which they are usually fed. In all his trials he found it extremely difficult to disguise the rye so as to induce the animals to swallow, voluntarily, any portion of food into the composition of which the ergot was introduced.

These experiments of M. Tessier's in confirming the opinions of those, who believed that the use of this substance was the cause of those gangrenous diseases, which had repeatedly appeared as endemical in various districts of France, afforded also a simple explanation of the fact, that persons might live for a considerable time upon rye affected with the cock-spur, without suffering any sensible injury from its use; since, in all the animals upon which it was tried experimentally, a given quantity was required to produce the specific effect; and they suggested the only measure, that of separating the diseased from the sound rye, which could prevent so great a national calamity as that which had been so often produced by its use.

The spurred rye occasionally occurs in this country, but there are no instances recorded of its producing any such effects as those enumerated above; but in the Philosophical Transactions Dr. Woollaston has narrated several cases in which dry gangrene was produced in one family, by partaking of damaged wheat: the following was the result, at the time the paper was published:—" Mary, the mother, ætat. forty. The right foot off at the ankle: the left leg mortified, a mere bone; but not off.

Mary, ætat. fifteen. One leg off below the knee: the other perfectly sphacelated, but not yet off.

Elizabeth, ætat. thirteen. Both legs off below the knee.

Sarah, ætat. ten. One foot off at the ankle.

Robert, ætat. eight. Both legs off below the knees.

Edward, ætat. four. Both feet off at the ankles.

An infant, four months old, dead.

The father, escaped by merely losing two fingers.

The wheat used, was what is called in Suffolk, where the family resided, "rives," or "bearded" wheat.

Nearly the same effects were produced in a family in Wiltshire, by the *Lolium Temulentum*, entering largely into the composition of bread; for an account of which we refer to No. 1. of our work.

QUALITIES AND CHEMICAL PROPERTIES OF ERGOT.—

The true nature of ergot has not hitherto been fully ascertained, notwithstanding the research and talent that have been brought to the investigation. Some have observed a viscid, fermenting juice in the glumes, previously to the formation of the ergot; while others have detected small larvæ, which being preserved have afterwards hatched into moths or butterflies. The Abbé Fontana planted in his garden a number of single grains of wheat and rye, and upon the top of each placed several grains of ergot. The result was, a crop in which both the wheat and rye were infected with ergot; which experiment indicates something like contagion in the disease, which may very possibly take place through the agency of insects.

In an Essay on the genus *Sclerotium* by De Candolle, in the "*Mémoires du Museum d'Histoire Naturelle*," the ergot is stated to be a parasitic production belonging to this genus; but, however ingenious his investigations may be, their result is by no means satisfactory; and it is now generally concluded to be a diseased modification of the grain of the rye itself.

Spurred rye, in its native state is of a violet or brownish colour. Its size is very variable, some grains being less than healthy rye, and can scarcely be perceived in their husks, whilst others are from one inch to an inch and a half in length, and of a proportionate thickness. The spur is nearly cylindrical,

having its ends somewhat obtuse, at times a little pointed, and bent a little in the shape of a crescent. But there is a great variety in this respect, although in all the shape is more or less *monstrous*. They have generally a longitudinal depression or two running from end to end. Some grains have cracks, apparently from dryness; and others small cavities, apparently the bites of coleopterous insects. On being broken transversely, they snap like dried almonds; and internally display a greyish-white substance, closely covered by the coloured cortical part, which does not separate from it on ebullition. Viewed through a microscope, this fracture presents in its centre an appearance of white brilliant grains like starch, and towards the circumference a violet shading besprinkled with minute whitish spots. When reduced to a powder it is of an ash-grey colour, and is very dry. If quite fresh, spurred rye is of a disagreeable sickly odour. A certain quantity, after having been kept for some years in a close box, contracted the smell of putrid fish. It was also of a black colour, and almost all the grains were in a degree worm-eaten, with little of substance left except the cortical part, so that it was quite friable to the touch. However, no other traces of insects could be discovered about them. When snuffed up into the nostrils it produces a slight degree of irritation, like a small pinch of powdered tobacco, occasioning a tendency to sneeze, and a pretty abundant secretion of mucus. In the grain, and quite dry, spurred rye has scarcely any taste, and, on being chewed, leaves in the mouth a slight acrimony. But in the powder its taste is nauseous, bitter, and acrid, like that of corn when in a state of decay. On kneading, with warm water, the flour of rye affected with the spur, a fetid disagreeable smell is very perceptible. The paste is not adherent, and the bread has neither the consistence nor smell of the common rye bread.

Parmentier, who had some made with flour containing one-third of spurred rye, asserts that the bread was quite inodorous, and only slightly bitter. However it may easily be conceived, that the qualities of such bread must vary according to the greater or less quantity of the spurred rye entering into its com-

position, which in a natural way can scarcely ever equal that formed by Parmentier. According to Vauquelin spurred rye yields by analysis a yellowish-fawn coloured matter, soluble in alcohol, exhaling a smell like that of fish oil; a white oily matter of a bland taste; a violet coloured matter, insoluble in alcohol; a free acid, which appears to be of the nature of phosphoric acid; a vegeto-animal matter in considerable quantity, much disposed to putrefaction, and which on distillation furnishes a considerable quantity of thick ammoniacal oil; a minute quantity of ammonia, exhaling at the temperature of boiling water. It also appears from the result of the same analysis, that rye in its spurred state no longer contains any starch; that its gluten has become altered, and that it abounds with a thick ammoniacal oil, which is never to be met with in rye when in its sound state. The same chemist, wishing to clear up an important point, has made a comparative analysis of *scleroticum*; by means of which he obtained results so totally different, that he considers De Candolle's opinion to be quite erroneous.

Pettehnhoffer is said to have demonstrated in 1819 the existence of *morphine* in spurred rye; and it is not improbable, but that future analyses of this curious production will lead to the discovery of an active principle, *sui generis*, on which its virtues as a medical agent depend.

MEDICAL PROPERTIES AND USES.—No notice occurs of spurred rye as a uterine remedy till 1688, when Camerarius stated, that the women in certain parts of Germany were in the habit of employing it to accelerate parturition. From that period till 1774 no author had made mention of its being used; and it was only then that a very brief letter from Parmentier to the editor of the *Journal de Physique*, made known that it was frequently given as a child-bed remedy by Madame Depelle, a midwife at Chaumont, in the Vexin. But this letter, which is a mere announcement of the fact, contained no other information. It was reserved for M. Desgranges to make known more fully the singular property of ergot. Having met with several midwives in 1777 both in Lyons and its environs, who, from a tra-

ditionary knowledge, were accustomed to employ it with no little mystery, he at length made trials of it, which for the most part were crowned with success. He published at different times and in various journals the results of his practice, and specified the peculiar circumstances which admit, or contraindicate the employment of this remedy. It is, therefore, to the zeal and knowledge of Desgranges that the world is indebted for the precise acquaintance of this valuable remedy, which he propagated with all his talents, against the strongest prejudice. When this discovery was first announced, it was only employed in the department of the Rhone and some of the frontier departments. Soon after its use began gradually to spread from various points throughout the kingdom, as may be proved by the number of cases published since in periodical works, by practitioners in the different departments. According to Dittmer, it is also used in different countries in Germany, and particularly in the environs of Ludwisbourg, in Wirtemberg, where it is principally in the hands of the midwives, who give it usually to be swallowed whole in its natural state, administering either five or nine grains for a dose, but always in odd numbers. At Florence, also, as well as in other parts of Italy; and in America this substance appears to be held in as much estimation as any article of the *materia medica*. And it is a singular fact, and well worthy of our notice, as tending to establish its claims, that its property of acting specifically on the uterus was first announced to the public of America by Dr. Stearns of New York State, in 1807; who, according to a statement by Dr. Bigelow, published in No. 2. Vol. 5. of the *New England Journal of Medicine and Surgery*, was ignorant of its ever being so employed in Europe: "The use of this article in medicine," says Dr. Bigelow, "is, to the best of our knowledge, an exclusively American practice, and if it is now introduced into any part of Europe, it must be from the publications of this country."

Like all other powerful remedies, the use of ergot might inadvertently be abused. It is therefore necessary to lay down some general rules for its administration.

(1st.) It must never be given when there is malformation of the bones of the pelvis, or of the soft parts of the mother, capable of opposing any remarkable obstacle to the passage of the fœtus. If the dimension of the pelvis be less than three inches and a half between the pubes and sacrum, the expulsion of a full grown fœtus will be very difficult; in which case the *ergot*, by exciting strong uterine contractions, without overcoming the mechanical obstacle, might produce rupture of the uterus itself; and in a case that lately occurred in the vicinity of London, it is very evident that the disproportion between the size of the child's head and the pelvis should have prevented the medical attendant from employing this powerful agent. A similar inconvenience might result too, if the passage were obstructed by any large tumour, or by any excessive rigidity of the orifice or sides of the vulva.

(2d.) The os uteri should be supple and yielding, and partly dilated; and the time of parturition should have decidedly commenced, or already existed for some time.

(3d.) It must not be used so long as the natural pains are efficient, and competent to the end; for art should never precede nature in hastening the natural act of delivery.

4th. The fœtus should be presenting in such a manner as to be expelled naturally; there being no necessity to change its position; nor should its bulk be too great for the natural passages. If it be, the *ergot* cannot with propriety be employed till that bulk is reduced.

(5th.) If the labour be accompanied by flooding, convulsions, syncope, &c. it may be sometimes employed with great advantage, provided the membranes are ruptured and the os uteri dilated.

(6th.) It may be used very often with much advantage in every kind of premature labour; and at full time, when the placenta is not thrown off, and the uterus is found in a state of atony.

(7th.) When flooding takes place after the rupture of the membranes; the os uteri well dilated; the pains feeble, but the child well situated.

(8th.) When the head of the child has been left in the uterus by being separated from the body.

(9th.) When the uterus is painfully distended with coagula.

The ergot powdered is the most simple of the preparations, and its properties are most apparent in proportion to its freshness and fineness. The dose usually given is from ten to sixty grains, and even more, during the labour; in a small wine-glass-full of barley water, capillaire and water, cinnamon water, or other convenient vehicle. As we must for the most part be ignorant to what extent this substance may act, and as there might arise much inconvenience in hurrying a labour too much, we ought never to exceed twenty grains for the first dose; and even this had better be given in two proportions after a short interval. But if at the end of an hour, it should produce no apparent effect on the uterus, we may give a scruple for a dose; and should it become necessary to administer it a third time, we may then give thirty grains. It may be easily imagined, that the manner of giving the spurred rye may vary infinitely; and that what we have advanced on this subject is far from constituting an invariable rule; as the ergot may be prescribed in different ways, according to the circumstances of the patient, and the particular views of the practitioner. We ought however to observe, that when given in doses too small, it only produces very weak muscular contractions of the womb, which serve to fatigue and wear out the strength of the patient instead of inciting that organ to expel its contents.

The *infusion*, or *tea of black rye* of the American practitioners, is made by infusing a drachm of the powder in a wine-glass of boiling water, till cold. To this preparation many persons give the preference, and administer half the quantity at the interval of an hour. Some persons boil the same proportions for a quarter of an hour, and this constitutes the *decoctum parturiens* of some writers.

M. Villeneuve, and many others, recommend the ergot to be administered in *lavements*, whenever there is too much susceptibility of stomach, nausea, or vomiting, and repugnance on the part of the patient to swallow it. It is of course given in this

manner in much larger doses, two or three drachms being boiled in half a pint of water ; and administered at intervals as may be necessary.

The action of the ergot appears to be specifically upon the uterine fibres ; urging them sooner or later to more or less violent contraction. It is not the alternate contraction alone that is increased by this substance ; the tonic, which is of much more value, is also powerfully augmented ; since it can, in consequence of this power, be most advantageously employed, in many cases where this effect is all-important. In this respect it appears different from other stimuli, which may exert an influence upon this organ ; such as opium, volatile alkali, &c. ; or the mechanical stimulus of the forceps, vectis, or the hand. Dr. Dewees states that he never witnessed any exaltation of the power of the arterial action from the exhibition of ergot, which is contrary to our own experience ; as in several cases in which we have tried it it has increased the fulness and frequency of the pulse ; produced a glow of skin ; and it has also been known to excite nausea, vomiting, and vertigo.

Each of the stimulants just referred to has been known to rouse the ultimate contractions of the uterus into a temporary, and sometimes successful action ; but after neither does the tonic contraction follow, with any degree of certainty ; on the contrary, inertia of this organ is very apt to follow their employment. Thus hæmorrhage sometimes succeeds the use of either of the remedies just named ; but extensive inquiry will justify the declaration that no such consequence arises from ergot. A very remarkable fact, is, that spurred rye does not appear to exert any very decided action upon the uterus, excepting when that organ has already put on the disposition to expel its contents. The experience of many years proves this important fact ; and it will be found on investigation that amongst the many accidents that are said to arise from its use in bread, that no mention is made of abortion or premature birth, as its immediate effect. We therefore consider this as a settled point, strengthened as it is by the knowledge, that it is familiarly used near Lyons to aid the parturient cow ; France being the country in which the most in-

genious methods are employed to accomplish this object; the desire for which, however urgent, proves a refined depravity, from the stigma of which, England is happily free.

It is a singular fact, that the *Chenopodium olidum* which has been proved by Mr. Houlton, and subsequently in our own practice, to have a *direct* action as an emmenagogue, agrees in its sensible properties with those of the ergot; and to preserve the particular odour of the latter, it is absolutely necessary that it should be kept whole in a glass bottle with a ground stopper; and only powdered when required for use; nor should it, if possible, be used when it exceeds a year in age; for, like every other vegetable substance, it is easily acted upon by heat and moisture; and its producing no effects in the practice of some can only be accounted for by its being effete; a circumstance of no uncommon occurrence, especially in this country.*

In a case of profuse hæmorrhage which lately occurred in our own practice, we found the membranes entire, the os uteri dilated to the size of a crown piece, attended by complete inertia of that organ. On examination, the placenta was not to be found within reach: we therefore discharged the liquor amnii, but without arousing the expulsive efforts. We then had recourse to scruple doses of ergot, given at an interval of ten minutes, and before a quarter of an hour had elapsed the pains came on, the hæmorrhage ceased, and the child was soon expelled; the placenta followed in due time, and no untoward symptom ensued.

Those of our readers who may be inclined to investigate the subject still further, may consult the following works, to all of which we are much indebted:—Professor Thomson's (of Edinburgh) Lectures on Inflammation; Dr. Neale on the Ergot of Rye; Mitchell's Difficult Cases of Parturition; the American Medical Journals; the Medical Repository, and the Lancet, *passim*.

* That scientific pharmaceutical chemist, Mr. Morson, of Southampton Row, has a large quantity of ergot at this time for sale, which we pronounce to be in the highest state of perfection.

HORDEUM VULGARE.—*Common Barley.*

GEN. CHAR. *Calyx* lateral, 2-valved, single-flowered, ternate.

SPEC. CHAR. *Flowers* all perfect, awned; two of the rows more erect than the rest.

Syn.—*Hordeum polistichum verum*, *Ger. Em.* 70.

Hordeum vulgare, *Lin. Sp. Pl.* 125.; *Errh. Pl. Offic.* 421.; *Lob. Icon.* 28.;

Host. Gram. Austr. v. 3. 35.

FOREIGN.—*L'orge avancé*, Fr.; *Orzo*, It.; *Cebada romana*, Sp.; *Gemeine Gerste*, Ger.

NEXT to wheat, the most valuable grain is barley. It is an annual plant, and is said to have been found wild in Sicily and Russia. The flowers are disposed in four rows, on a common receptacle or main stalk, which is elongated into a long, flat, jointed spike or ear. The glume, or outer chaff, consists of two narrow, pointed valves, one half shorter than the corolla, each containing a single sessile flower; the corolla or inner chaff is ovate, concave, and terminates in a very long, flat, serrated awn or beard. The filaments are capillary, shorter than the corolla, with notched anthers. The seed or grain is ovate, channelled, and firmly coated with both valves of the corolla. This is the barley most generally cultivated; but *Hordeum distichon*, two-rowed barley, is the species admitted into the Dublin Pharmacopœia, from which the pearl barley of the shops is said to be principally prepared.

Barley is used in some countries for making bread; but it is chiefly cultivated for the purpose of forming malt liquors or distilled spirits. To prepare *malt* barley is the grain usually employed. It is steeped for two or three days in water until it swells, becomes tender, and imparts its colour to the liquid. The water is then withdrawn, and the grain is spread out on the floor to the depth of two feet, where its

temperature rising spontaneously, it begins to germinate, bursting and shooting out the radicle. This process is soon stopped by spreading the grains over a large surface, and turning them repeatedly, which is continued for two days; after which they are again made into a heap, and allowed to remain in this state till they turn warm, and are then dried in a kiln by a gentle heat. *Beer* is made from malt previously ground by a mill. This is put into a large vessel or tub with a false bottom, termed the mash-tub; hot water is poured upon it, and the whole stirred up at intervals. The temperature of the water in this operation, called Mashing, must not be equal to boiling; for, in that case, the malt would be converted into a paste, from which the impregnated water could not be separated. This is called Setting. After the infusion has remained for some time upon the malt, it is drawn off, and is then distinguished by the name of sweet wort. By one or more subsequent infusions in water, a quantity of weak wort is made, which is either added to the foregoing, or kept apart, according to the intention of the operator. The wort is then boiled with hops, which give it an aromatic, bitter taste, and render it less liable to be spoiled in keeping; after which it is cooled in shallow vessels, and suffered to ferment, with the addition of a proper quantity of yeast. During the fermentation, an internal commotion takes place in every part of the liquor, caused by the extrication of gas, raising to the surface a quantity of yeast, in which the air bubbles are enveloped. After this fermentation has continued a certain time, and the head does not seem likely to rise any higher, it is necessary to put a stop to it, as it would be succeeded by the acetous fermentation; this being called the vinous, producing alcohol or spirit. This is performed by drawing off the beer, and putting it into small casks, where it continues to ferment, and discharge yeast for some time, the casks being filled up as they diminish in their contents. When the working ceases, the casks are bunged up, and the beer set aside for table. The strength and quality of the liquor differs greatly according to the nature of the grain, the particular substances that have been added to flavour it, the length to which the fermentation is allowed to proceed, and the various manipulations which are adopted by different manufacturers, both in the preparation of the malt and in the subsequent processes.

Pearl barley is prepared in Holland and Germany, by first moistening and shelling the grains, and then grinding them into round granules, in a mill. *Pearl* barley consists principally of starch, with a small portion of gluten, mucilage, and saccharine matter.

USES.—Barley bread is much used by some northern nations; but it is less nutritious than that prepared from wheat or rye. The decoctions of barley, barley water, and barley broth, are well known. The former is much employed as an agreeable and wholesome nourishment for the sick, and barley water, acidulated with the juice of lemons or oranges, forms one of the most salutary beverages in febrile diseases. Sweet wort was formerly

much used as an antiscorbutic in the navy ; and a cataplasm of yeast, with barley meal, or ground malt, is sometimes employed as a stimulant and antiseptic, to fowl spreading ulcers and gangrenous parts. When properly fermented, of a moderate strength, and used within the limits of propriety, malt liquors are refreshing, wholesome, and considerably nutritive. It is a common observation, that those who drink sound malt liquors are stronger than those who drink wine ; and to those who are trained to boxing and other athletic exercises, home-brewed beer is particularly recommended. Hence Jackson, the celebrated trainer, affirms, that if any person accustomed to drink wine would try malt liquor for a month, he will find himself so much the better for it, that he would soon take to the one and abandon the other. Malt liquors are divided into small beer, strong beer, ale, and porter. Small beer, and the weaker ales, are refreshing, gently stimulant, and nutritive drinks. Porter, and the stronger ales, are exceedingly nutritious, and strengthening when used within the limits of sobriety ; but these liquors, can seldom be procured genuine, at least in London.

OFF. PREP.—Decoctum Hordei L. E. D. Decoct. Hordei Compositum, L. D.

AVENA SATIVA.—*Common Oat.*

GEN. CHAR.—*Calyx* 2-valved, many-flowered ; with a twisted awn on the back.

SPEC. CHAR.—*Pannicled*, calyces 2-seeded ; *Seeds* very smooth, 1-awned.

Syn.—Avena, *Camer. Epit.* 191 ; *Fuchs. Hist.* 185.

Avena sativa, *Lin. Sp. Pl.* 118 ; *Willd.* i. 443.

FOREIGN.—*L'avoine cultivée*, Fr. ; *Tuttenhaver*, Ger.

THE Oat was found by Anson growing wild upon the island of Juan Fernandez, but no one has been able to ascertain satisfactorily the place from whence it was first brought to Europe. The

root is an annual, sending up a culm or straw, about two feet in height. The inflorescence is in a loose pannicle, with the subdivisions on long pendulous peduncles. The two glumes or chaffs of the calyx are marked with lines, pointed, unequal, and longer than the flower. There are usually two flowers and seeds in each calyx; they are alternate, conical, the smaller one is awnless, the larger puts forth a strong, two-coloured, bent awn, from the middle of the back. Of this grain the varieties are more numerous than any other of the culmiferous tribe; but in this country, that which is called the *potatoc oat*, is considered the best.

QUALITIES.—M. Vogel could detect no gluten in oats; but he obtained an azotized substance, destitute of elasticity, and having no resemblance to gluten. Oats contain, besides fecula or starch, a saccharine matter, a bitter principle, and a fixed oil, of a yellowish green colour.

USES.—The flour or meal made into cakes and pottage, is the common food of the country people in the north. Grits, or oats freed from their cuticle, are much used in making broths and gruels. They are wholesome and gently laxative. Gruel, is prepared by boiling either the meal or grits, for a proper length of time, in water. It is moderately nutritive, and demulcent, hence it is frequently prescribed in inflammatory diseases, diarrhœa, cholera, dysentry, and other diseases. The meal boiled in water forms an excellent suppurative poultice.



Cochlearia - Ammoracia?

COCHLEARIA ARMORACIA.

Horse-radish.

GEN. CHAR. *Pod* emarginate, turgid, rugged, 2-valved.
Seeds numerous.

SPEC. CHAR. Radical *leaves* oblong, crenate; those
 of the *stem* lanceolate, either cut or entire.

Syn.—*Raphanus rusticanus*, *Raii Syn.* 301; *Ger. Em.* 241. *f.*; *Matth. Valgr.* v. 1.
 401. *f.*; *Camer. Epit.* 225.

Raphanus sylvestris, *Fuchs. Hist.* 660. *f. t.* 379. *f.*

Nasturtium n. 504 *Hall. Hist.* v. 1. 218.

Cochlearia Armoracia, *Lin. Sp. Pl.* 904; *Willd.* v. 3. 451; *Fl. Brit.* 690;
Eng. Bot. v. 33. *t.* 2323; *Woodv. t.* 150.

FOREIGN.—*Cranson de Bretagne*; *Raifort Sauvage*; *Montarde des Allemands*, Fr.;
Rafano rusticano, It.; *Marvisco*, Sp.; *Murrettich*, Ger.

HORSE-RADISH is a perennial plant, growing naturally by the sides of ditches, on the banks of rivers, and in waste grounds, from the refuse of gardens. It has long been received into our materia medica, and was cultivated in Britain in the time of Gerard, who says, “Horse-radish for the most part groweth, and is planted in gardens, yet have I found it wild in sundrie places, as at Namptwich in Cheshire, in a place called the Milne Eye, and also at a small village near London, called Hogsdon, in the field next vnto a farm house, leading to Kingsland, where my verie good friend Master Bredwell, practitioner in physick, a learned and diligent sercher of symples, and Master VVilliam Martin, one of the Fellowship of Barbers and Chirurgians, my decre and louing friende, in company with him, found it, and gaue me knowledge of the place where it flourisheth to this day.” The specimen from which our figure was designed, grew by the side of the Thames, between the Red-House, Battersea, and

Putney Bridge, where it was also found many years ago by Sir J. E. Smith, and figured in "English Botany," t. 2223. It flowers in June; but rarely perfects its seeds.

The root, so well known at table as an accompaniment of the roast beef of Old England, is long, white, cylindrical, strikes deep into the earth, and is extremely difficult of extirpation. The stem is round, erect, branched, and rises about two feet high. The radical leaves are petiolate, very large, dark green, oblong, obtuse, veiny, crenate, waved, and occasionally pinnatifid: those of the stem are scattered, much smaller, sessile, lanceolate, sometimes serrated or toothed, and sometimes entire. The flowers are numerous, white, and terminate the stem in dense clusters. The leaves of the calyx are ovate, concave, spreading, and deciduous; the petals obovate, twice the length of the calyx, and inserted by narrow claws. The filaments are awl-shaped, incurved, the length of the calyx, and bearing heart-shaped anthers. The germen is oblong, surmounted with a short style, and a large capitate stigma, changing into an elliptical, compressed, notched, bilocular pod, containing about four seeds, in each cell, most of which prove abortive.—Fig. (a) represents a flower, with the calyx and petals removed; (b) the germen; (c) the pod.

CULTURE.—The Horse-radish is generally propagated by cuttings, and requires a rich deep soil, in order to induce the plants to strike their roots freely. "Crowns," says Mr. Neill, "having about two or three inches only of root attached to them, make very good plants; but cuttings of the knotty parts of the roots, provided always they be furnished with one or two buds or eyes, are often preferred, as they are to be planted entirely under the soil. They are generally planted in February or March, in lines, leaving a foot and a half between each line. The sets are placed at the depth of at least a foot; if the soil be light, fifteen inches is not too deep. The roots are not dug for use till the second year; and they are raised only when wanted, the pungent quality escaping rapidly as the root dries."

QUALITIES.—The root has a pungent odour and a warm aerid taste, with a degree of sweetness. Both water and alcohol, extract its virtues. By drying it loses all its aerimony, becoming at first sweetish, and afterwards nearly insipid; if kept in a cool place, covered with sand, it retains its pungency for a long time. It yields by distillation with water, a pale yellow-coloured, aerid, pungent, essential oil. According to Einhoff, the distilled watery liquid yields traces of sulphur.

MEDICAL PROPERTIES AND USES.—The use of the scraped root as a warm pungent condiment to various kinds of animal food, and also to give a zest to winter salads, is well known. As an article of the materia medica its effects much resemble those of the mustard-seed, but is somewhat more powerful. Infused in water, and received into the stomach, it acts as a stimulant, diuretic, and sudorific, and is occasionally employed with advantage in paralytic affections and chronic rheumatism; it has also been successfully administered in dropsy supervening upon intermittent fever, particularly by Sydenham. This infusion, taken with large draughts of warm water, readily proves emetic, and may either be employed by itself to excite vomiting, or to assist the operation of other emetics. It has also been used as a sialagogue, in paralysis of the tongue, in some obstinate cutaneous diseases, and in asthma. One drachm of the root infused in a close vessel, with four ounces of boiling water, and made into a syrup with double its weight of sugar, taken in the quantity of a teaspoonful, and swallowed leisurely, is strongly recommended by Dr. Cullen to remove hoarseness, arising from relaxation or deficient secretion of mucus. Externally, it readily inflames the skin, and if its application be long continued produces blisters. An infusion of the root in milk is recommended by Dr. Withering, as one of the safest and best cosmetics. Horse-radish may be given in doses of a drachm or more of the recent root cut into small pieces, and swallowed entire.

OFF. PREP.—Infusum Armoraciæ compositum, *L. D.*

Spiritus Armoraciæ compositus, *L. D.*

COCHLEARIA OFFICINALIS.—*Common Scurvy-grass.*

SPEC. CHAR. *Radical leaves* roundish; those on the *stem* oblong and somewhat sinuated. *Pod* globose.

Syn.—*Cochlearia*, *Raii Syn.* 302; *Bauh. Hist.* v. 2. 942. *f.*; *Camer. Epit.* 271. *f.*; *Cochlearia rotundifolia*, *Ger. Em.* 401. *f.*

Nasturtium, n. 503.; *Hall. Hist.* v. 1. 218.

Cochlearia Armoracia, *Lin. Sp. Pl.* 903; *Willd.* v. 3. 448.; *Fl. Brit.* 688.

Eng. Bot. v. 8. t. 551.; *Wcadv.* t. 29.; *Hook. Lond.* 195.

FOREIGN.—*Cranson officinal.* Fr.; *Coclearia*, It.; *Gemeine Löffenkraut*, Ger.

SCURVY-GRASS is a low, annual plant, growing wild on the sea-coasts of Britain and other countries, and not unfrequently in mountainous situations far inland. It varies considerably in size and luxuriance, and somewhat in the shape of its foliage. The stem is angular, smooth, usually a foot high, and, in the month of May, ornamented with numerous tufts of flowers of a snow-white colour. The leaves are all smooth, and rather succulent: the radical ones on long footstalks, of a roundish-heart shape, and wavy; the stem leaves smaller, embracing the stem, oblong, sinuated, or deeply toothed. The calyx leaves are ovate, obtuse, concave; petals obovate, with longish claws; stamens six, incurved; pod nearly globular, slightly rugose, and crowned with a short style. A thick-leaved variety called Dutch scurvy-grass is sometimes cultivated in gardens for medicinal purposes.

QUALITIES.—The whole herb has a warm, acrid taste, and a pungent rather unpleasant smell when bruised. Its active matter is extracted by maceration, both by water and alcohol; but its principal virtue seems to reside in an essential oil, separable in very small quantity by distillation in water.

USES.—Scurvy-grass has long enjoyed the reputation in the world as one of the most powerful of the antiscorbutic plants. Sydenham and Lewis recommend it strongly, combined with arum and wood-sorrel, in rheumatic and paralytic affections. As an antiscorbutic, the expressed juice of the plant should be taken in the quantity of a pint a day, or the smaller leaves daily eaten as a salad. Of equal virtue, however, with scurvy-grass is the horse-radish, mustard, the tops of turnips, water-cress, lime-juice, oranges, and many other vegetables.



Pyrus Cydonia L.

Indica et Persica, quae in Asia et Persia nascitur.

PYRUS CYDONIA.

Common Quince-tree.

Class XII. ICOSANDRIA.—Order IV. PENTAGYNIA.

Nat. Ord. POMACEÆ, Lin. ROSACEÆ, Juss.

GEN. CHAR. *Calyx* superior, 5-cleft. *Petals* 5.
Apple inferior, with from 2 to 5 cells, many-seeded.

SPEC. CHAR. *Leaves* roundish elliptical, entire;
 downy beneath. *Flowers* solitary, stalked. *Calyx*
 serrated, reflexed.

Syn.—*Malus cotonea*, *Ger. Em.* 1452; *Rau Hist.* p. 1452; *Bauh. Hist.* v. 1. p. 35;
Matth. Valgr. v. 1. 217.

Cotonia et Cidonia mala, *Lob. Ic.* v. 2. p. 152.

Pyrus Cydonia, *Lin. Sp. Pl.* 687. *Willd.* 2. n. 17. *Jacq. Austr.* t. 342;
Woodv. v. 2. t. 79.

FOREIGN.—*Coignassier*, Fr.; *Melacotogna*, It.; *Quittenkorner*, Ger.; *Abee*, Hind.

THE Quince-tree is a native of the rocky banks of the Danube, and is naturalized in the hedges of Germany. Dr. Sibthorp found it wild in the northern parts of Greece, in which country it still retains the ancient name *κοδωνιά*, so called from Cydon a town in Crete where it grew. Thunberg found it growing in Japan, where it is called *umbats*. It was among the first exotic fruits cultivated in England, where it blossoms in May or June, and ripens its fruit in November.

The tree is of low growth, much branched, and generally distorted. The leaves are roundish or ovate, entire, varying in size, smooth, and of a dusky green colour above, paler and downy beneath, and stand upon short foot-stalks. The flowers are large, solitary, and of a pale rose-colour, or white; the calyx is superior, villous, persistent, and divided into five spreading segments: the corolla is composed of five petals; these are concave, roundish, and inserted into the calyx: the filaments are about twenty, awl-shaped, shorter than the corolla, and support yellow anthers:

the germen is orbicular, with five slender styles, and simple stigmas. The fruit is large, varying in shape, yellow, downy, umbilicated, and when ripe has a peculiar fragrant odour, and a very austere acidulous taste; each of its cells contains two or three ovate, angular, reddish brown, cartilaginous seeds, ranged horizontally.—Fig. (a) section of the fruit; (b) a seed.

There are different varieties of the fruit; as the globular, or apple-quince; oblong, or Portugal quince; and the pear-shaped, or pear-quince. The Portugal quince is the best, but the fruit is produced sparingly. The quince tree is propagated by layers, by suckers, or by cuttings. It thrives best in a moist soil, but the fruit is superior in a dry one. The quince is supposed to be the golden apple of the Hesperides, so famous in ancient fable.

QUALITIES AND USES.—The seeds are inodorous, nearly insipid, and abound with an impure mucilage, which they yield to boiling water. One drachm makes six ounces of a nearly colourless transparent mucilage, resembling in consistency the white of egg; which is occasionally prescribed as a demulcent in gonorrhœa, tenesmus, dysentery, and in apthous affections and excoriations of the mouth and fauces; in the latter case it is generally combined with borax and honey. A diluted solution of it injected beneath the eye-lids is recommended by Dr. Thompson, for obtunding the acrimony of the discharge in violent inflammations of the eye. It is the most agreeable of all the mucilages; but is apt to spoil and become mouldy in a short time.

In its raw state the fruit is not eatable; but when prepared it becomes mild, and to many persons highly grateful. A small portion of it added to stewed or baked apples is useful for giving pungency and flavour. The expressed juice taken in small quantities is cooling, antiseptic, and astringent, useful in nausea, vomiting, as well as some kinds of diarrhœa; by boiling it loses its astringency. Formerly this was directed in the London Pharmacopœia to be made into a syrup; but the only preparation of the quince, which it now directs, is the decoction of the seeds. An elegant sweetmeat, or marmalade (*Miva cydoniorum*,) is prepared by boiling the pulp over a gentle fire, with an equal weight of sugar.

OFF. PREP.—Decoctum Cydoniæ, L.



Tanacetum vulgare L.

TANACETUM VULGARE.

Common Tansy.

Class XIX. SYNGENESIA.—Order II. POLYGAMIA
SUPERFLUA.

Nat. Ord. COMPOSITÆ, γ, DISCOIDÆ, Lin. CORYMBIFERÆ,
Juss.

GEN. CHAR. *Receptacle* naked. *Seed* with a membranous crown. *Calyx* imbricated, hemispherical. *Florets* of the circumference 3-cleft, obsolete, sometimes wanting.

SPEC. CHAR. *Leaves* doubly pinnatifid, deeply serrated, naked.

Syn.—Tanacetum, *Raii Hist.* 108; *Ger. Em.* 650. f.; *Matth. Valg.* v. 2. 259. f.; *Camer. Epit.* 650. f.; *Trag. Hist.* 158. f.
Tanacetum millefolii foliis, *Lob. Ic.* 749. f.
Tanacetum, n. 132.; *Hall. Hist.* v. 1. 57.
Artemisia monoclonos, *Fuchs. Hist.* 46. f.
Athanasia seu Tanacetum, *Dalech. Hist.* 955.
Tanacetum vulgare, *Lin. Sp. Pl.* 1184; *Willd.* v. 3. 1814; *Fl. Brit.* 862.; *Eng. Bot.* v. 18. t. 1229; *Hook. Scot.* 239.; *Bull. Fr. t.* 187.; *Woodv. t.* 115.; *Stokes v.* 4. 180.

FOREIGN.—*Tanassie*, Fr.; *Tanaceto*, It.; *Atanasia*, Sp.; *Rheinfarn*, Ger.; *Wormkruid*, Dut.; *Rheinfan*, Dan.; *Dikaja riabina*, Russ.

TANSY is a well-known perennial plant, a native of most parts of Britain, growing generally on the banks of rivers, hedges, and the borders of fields; flowering in July and August.

The root is long, somewhat creeping, and fibrous. In a wild state it seldom exceeds two feet in height; the stem is erect, rather angular, striated, leafy, solid, unbranched, smooth, and frequently reddish towards the top; the leaves alternate, dark green, smooth, doubly pinnatifid, and notched or deeply serrated. The flowers are numerous, of a golden yellow colour, flattish, and terminate the stem in a dense corymb. The common calyx is hemispherical and imbricated; the scales are acute and mem-

branaceous at the margin. The florets are of two kinds; those of the *disc hermaphrodite*, numerous, tubular, and 5-cleft; those of the *radius female*, few, sometimes wanting, tubular at the base, and 3-cleft. There are five capillary, very short filaments, in the florets of the disc only, with the anthers forming a cylindrical tube; the germen in both is obovate, compressed; the style thread-shaped; and the stigma bifid and reflexed; the permanent calyx contains solitary, oblong, angular; seeds crowned with a membranous border.—Fig. (a) a floret of the disc; (b) floret of the radius; (c) common calyx; (d) receptacle.

Besides the common tansy, there are two or three other species, very generally cultivated in our gardens, particularly the annual tansy, (*T. annuum*;) and the costmary tansy, or ale-cost (*T. balsamita*.) Of the former there is a variety with curled leaves, which is often called double tansy, and likewise a sort with variegated leaves, which is sometimes admitted into shrubberies.

QUALITIES.—The leaves and flowers have a warm, bitter taste, and a strong, peculiar, not unpleasant odour. These qualities they readily impart both to water and alcohol: and a greenish-yellow essential oil is afforded by distillation with water, smelling strongly of the herb.

MEDICAL PROPERTIES AND USES.—Tansy is tonic, stomachic, and anthelmintic; and as such is useful in dyspepsia, dropsy, hysteria, intermittents, obstructed menstruation, and other diseases; it also forms a popular remedy for expelling worms, particularly the *lumbricus teres*, or round worm. Not only the leaves and flowers have been employed with this intention, but also the seeds, which, according to Dr. Woodville, are sometimes substituted for those of Santonium. The infusion in boiling water has been strongly recommended by Dr. Clarke as a preventive of the return of gout; * but experience has not confirmed its utility. The young leaves are sometimes shredded down and employed to give flavour and colour to puddings; and the Finlanders prepare a red dye from them. If dead animal matter be rubbed with this plant, Dr. Withering says, the flesh-fly will not attack it.

DOSE.—In powder, the dose may be from ʒj to ʒj, twice or thrice a-day; but it is more commonly taken in infusion, or drunk as tea.

* Clarke's Essays Physical and Literary, v. 3, p. 438.



Prunus Lauro-cerasus.

PRUNUS LAURO-CERASUS.

*Common Cherry-Laurel.**Class XII. ICOSANDRIA.—Order I. MONOGYNIA.**Nat. Ord. POMACEÆ, Lin. ROSACEÆ, Juss.*

GEN. CHAR. *Calyx* inferior, 5-cleft. *Petals* 5. *Nut* of the *drupe* with prominent sutures.

SPEC. CHAR. *Flowers* in racemes. *Leaves* evergreen, bi-glandular at the base.

Syn.—Laurocerasus, *Ger. Em.* 1603; *Raii Hist.* 1549; *Camer. Hort.* t. 23; *Clus. Hist.* 1. 4; *Tourn. Inst.* 627; *Du Hamel Arbr.* 1. t. 133.

Cerasus trapezuntina, sive *Laurocerasus*, *Park. Theatr.* 1518. f. 2; *Parad.* 401. t. 399. f. 6.

Cerasus folio laurino, *Bauh. Pin.* 450.

Padus Laurocerasus, *Mill. Dict. n.* 4; *Lin. Hort. Cliff.* 185.

Prunus Lauro-cerasus, *Lin. Sp. Pl.* 678; *Willd.* ii. p. 988; *Hort. Kew.* ii. 164; *Bull. Fr.* 153; *Pallas Fl. Ros.* v. 1. p. 17; *Plenck. Icon.* 383; *Woodv. 2d ed.* 515. t. 185.

FOREIGN.—*Laurier-cerise*, Fr.; *Lauro regio*; *Lauro di Trabesonda*, It.; *Loiroce-rejo*, Port.; *Lorbeerkirsche*; *Kirschlorbere*, Ger.

THE common laurel is a native of the Levant, and was cultivated in Britain as early as 1629; but the precise period of its introduction is uncertain. It is a hardy evergreen shrub, or small tree, and is planted near houses, and in shrubberies, as an ornamental plant, producing its elegant spikes of odorous white blossoms early in May. We may remark, that it is frequently mistaken for the bay, and is regarded as the plant which furnished crowns for the Roman heroes. There is no doubt, however, that it was the sweet-bay (*Laurus nobilis*) which furnished the wreath worn on the brow of the victor, and of the priestess of Delphi. The mistake is supposed to have arisen

from the bay having formerly been called laurel, and the fruit of it only named *bayes*.

The common laurel attains the ordinary stature of a plum or cherry-tree, sending off long spreading branches, covered with a smooth brown bark. The leaves are alternate, and stand upon short foot-stalks; they are elliptical or obovate, tapering towards the base, pointed and curved at the apex, minutely toothed, smooth, and polished with a prominent midrib, and of a deep green colour. At their base underneath are two small yellow glands. The flowers are in spikes, on short, simple, axillary peduncles. The calyx is inferior, bell-shaped, and divided at the brim into five obtuse segments. The corolla consists of five small white concave, roundish, spreading segments. The filaments, which are alternately long and short, are about eighteen, awl-shaped, inserted into the calyx, and furnished with roundish yellow anthers. Before the petals unfold, the stamens are inflexed, and the anthers disposed in a circular form within the rim of the calyx, as is well represented on the plate (fig. *a*). The germen is roundish, supporting a columnar style, and terminated by an orbicular stigma. The fruit, or drupe is globular, of a shining black colour, and resembling a small cherry, both in its external appearance and internal structure. Fig. (*a*) represents a section of a flower, showing the position of the stamens; (*b*) the germen and style, (*c*) the fruit; (*d*) a drupe cut across, to show the nut or stone.

POISONOUS EFFECTS.—The distilled water of this plant, the virtues of which depend on the prussic acid that it contains, is a deadly poison. When applied to wounds in animals it induces vomiting, convulsions, great prostration of strength, diminished sensibility, and death. Injected into the stomach and rectum, it excites a similar train of symptoms, excepting that, in the latter, the convulsions are more violent, and tetanus of the extremities is produced. Its action has been found most rapid and intense when injected into the jugular vein.

Many cases are on record of its effects on man, and the earliest with which we are acquainted, are contained in the 37th vol. of the Phil. Trans. by Dr. Madden of Dublin, part of whose communication we give. “A very extraordinary accident that fell out here some months ago, has discovered to us a most dangerous poison, which was never before known to be so, though it has been in frequent use among us. The thing I mean is a simple water, distilled from the leaves of the *Lauro-cerasus*. The water is, at first, of a milky colour, but the oil which

comes over the helm with it, being in a good measure separated from the phelgm; by passing it through a flannel-bag, it becomes as clear as common water. It has the smell of the bitter almond, or peach-kernel, and has been for many years in frequent use among our housewives and cooks, to give that agreeable flavour to their creams and puddings. It has also been much in use among our drinkers of drams; and the proportion they generally use it in, has been one part of laurel-water, to four of brandy. Nor has the practice, (however frequent,) ever been attended with any apparent ill-consequences, till some time in the month of September, 1728, when it happened that one Martha Boyse, a servant, who lived with a person that sold great quantities of this water, got a bottle of it from her mistress, and gave it to her mother, Anne Boyse, as a very rich cordial.

“ Anne Boyse made a present of it to Frances Eaton, her sister, who was a shopkeeper in the town, and who she thought might oblige her customers with it. Accordingly, in a few days, she gave about two ounces of the water to a woman called Mary Whaley, who had bought some goods of her. Mary Whaley drank about two-thirds of what was filled out, and went away. Frances Eaton drank the rest. Mary Whaley went to another shop, and in about a quarter of an hour after she had drank the water, she complained of a violent disorder in her stomach. She was carried home, and from that time she lost her spirit, and died in about an hour, without vomiting, or purging, or any convulsion.

“ The shopkeeper, Frances Eaton, sent word to her sister, Anne Boyse, of what had happened, who came to her and affirmed that it was not possible that the cordial, as she called it, could have occasioned the death of the woman; and to convince her of it, she filled out about three spoonsful, and drank it. She continued talking with Frances Eaton about two minutes longer, and was so earnest to persuade her of the liquor being inoffensive, that she poured out two spoonsful more, and drank it off likewise. She was hardly well seated in her chair, when she died, without the least groan or convulsion. Frances Eaton, who had drank somewhat above a spoonful, found no disorder in her stomach or elsewhere; but to prevent any ill consequences, she took a vomit, and has been well ever since.

“ Mary Whaley was buried without being examined by any one that I can find, except the coroner. I went to see Anne Boyse about twenty-four hours after her death, but could not prevail to have her opened. She was about sixty years old; her countenance and skin appeared well coloured, and her features were hardly altered, so that she looked as one asleep. Her belly was not swelled, nor had she any other external mark of poison.

“ This accident brought into discourse another of the like nature, which happened about four years since in the town of Kilkenny. A young gentleman, son to Alderman Evans, mistook a bottle of *laurel-water* for one of *ptisan*. What quantity he drank is uncertain, but he died in a few minutes, complaining of a violent disorder in his stomach. This affair was not much regarded at that time, because he laboured under a distemper, to which, or to an improper use of remedies, his death was attributed by those about him.”

Then follow Dr. Madden's experiments on animals; and the same volume contains also a narration of Dr. Mortimer's.

Foderè states, that when "he was attending his studies at Turin, in 1784, the chamber-maid and man-servant of a noble family of that town, stole, for the purpose of regaling themselves, a bottle of distilled laurel-water, which they took for an excellent cordial. Fearful of being surprised, they hastily swallowed, one after the other, several mouthfuls of it: but they soon paid the price of their dishonesty, for they expired almost instantly in convulsions. The dead bodies were carried to the university for examination. The stomach was found highly inflamed, but the rest of the organs were in a sound state."*

A very interesting trial took place during the last century, from a supposition (well grounded we conceive) that the distilled laurel-water had been administered. As it is often referred to by medico-legal writers, we think it right to give the account, which, with some remarks of Professor Beck, are quoted from his invaluable work on Medical Jurisprudence; the pamphlet, containing an account of the trial, taken in short-hand by Mr. Gurney, being so scarce that we are unable to obtain it.

"Sir Theodosius Broughton was a young gentleman of fortune in the county of Warwick, and nearly arrived at the age of twenty-one. His mother and his brother-in-law, Captain Donellan, and his sister, (Mrs. Donellan,) resided with him. In the event of his dying before the period of his majority, the greatest part of his fortune descended to his sister, and Captain Donellan would thus become entitled to a life-estate in it. Sir Theodosius was labouring under a slight syphilitic affection, for which he was attended by Mr. Powell of Rugby. His general health is, however, stated to have been good. On the 29th of August, 1780, Mr. Powell sent him a draught to be taken on the next morning, consisting of rhubarb and jalap, each fifteen grains; spirits of lavender, twenty drops; nutmeg-water, two drachms; simple syrup, two drachms; and an ounce and a half of simple water. The bottle containing this draught was placed on a shelf in his bed-room. He returned in the afternoon of this day from fishing, in good health and spirits. In the morning, a servant awoke him at an early hour, for the purpose of obtaining some straps for a net. He arose, and went into the next room for them. Even now he appeared in perfect health. About seven a.m. Lady Broughton got up and went into his room, as he had before desired her, to give him the medicine. She enquired whether he had taken it, or whether he chose that she should give it to him. He desired her to reach down the draught which was labelled "Purging Draught for Sir T. B.," and she poured it into a cup, for the purpose of his taking it. He had not, however, swallowed more than half of it, when he complained that it was so nauseous to the taste, and disagreeable to the smell, that he did not apprehend he should be able to keep it on his stomach. This remark induced Lady Broughton to smell the draught. She found it very peculiar in this respect, and observed to him that it smelt very strongly of bitter-almonds. He ate some cheese in order to take the taste out of his

* Foderè, vol. iv. p. 27.

mouth, and afterwards washed his mouth with some water. In about two minutes after swallowing the draught, he appeared to struggle very much, as if to keep it down, and had a rattling and gurgling in his stomach. These symptoms continued about ten minutes, when he seemed to Lady Broughton to be inclined to go to sleep, and she left the room. She returned again in about five minutes, and was surprised to find him with his eyes fixed upwards, his teeth clenched, and froth running out of his mouth. He died in about half an hour afterwards, never having spoken since he took the draught.

“ Captain Donellan came into the room when Sir Theodosius was dying, and inquired of Lady Broughton where the physic-bottle was. She showed it to him. He immediately took and poured water into it, shook it, and then emptied its contents into the wash-hand basin. And he persisted in doing this with another bottle, although Lady Broughton remonstrated, and objected to his conduct. Mr. Powell was sent for, but arrived after the death of Sir Theodosius. It appeared also in evidence, that Capt Donellan had a still in his own room, and that he had used it for distilling roses.

“ Some days after the death of Sir T., he brought this still to one of the servants to be cleaned. It was full of lime, and the lime was wet. On the other hand, it appeared on the cross-examination of Lady Broughton, that Sir T., a short time before his death, had bought arsenic to poison fish, and some of this was afterwards found locked up in his closet. Suspicions soon began to be excited as to the cause of this sudden decease, and when these reached the ears of Sir W. Wheeler, the guardian of the young baronet, he wrote to Capt. Donellan, informing him of the rumours that were abroad, and requesting him to have the body opened, to satisfy the family and the public. Donellan immediately assented to this, and sent for some medical gentlemen. He, however, did not explain to them the cause of his request; and as they were thus led to suppose it merely an ordinary case, they declined the performance, on account of the putrefaction of the body. It is not necessary, nor indeed does it belong to this statement, to enumerate the various devices by which Donellan evidently attempted to elude the wishes of Sir W. Wheeler respecting a dissection. On the eighth day after death the body was buried; but it was taken up immediately after by the coroner and opened. It was found swollen and distended, the face was black, the lips swollen and retracted, and showing the gums, the teeth black, the tongue protruding, and the skin spotted in various parts of the body. ‘ The orifices and small arch of the stomach, and the intestines, bore the appearance of inflammation; the heart was natural, the lungs were suffused with blood, looking red, and spotted in many places with black specks; and on the back part, the blood had settled in a deep-red colour, almost approaching to purple; the diaphragm was in the same state, and in general upon the depending surfaces of the body, the blood was settled in the like manner: the kidneys appeared black as tinder, and the liver was much in the same state.’ There was also some extravasated blood in the thorax.

“ Several physicians and surgeons deposed, that they performed experiments on animals with laurel water, and found the effects very

similar to the symptoms produced in Sir T. Broughton's case. Death succeeded in a few minutes, after having been preceded by convulsions. The appearances on dissection also agreed.

"It may be mentioned in this place, that Mr. Powell prepared a draught precisely alike to that which he had sent to the Baronet, with the addition of some laurel-water; and Lady Broughton on being requested to smell it, stated that it resembled the one she had given to her son.

"The counsel for the prisoner, in their cross-examination, inquired of the medical witnesses, whether the presence of epilepsy or apoplexy would not account for the symptoms observed? To this a negative answer was given. Dr. Parsons thought they resembled the latter most, but he was decided in attributing them to the effects of the medicine. Sir Theodosius was young, of a spare habit, and it was, therefore, very improbable that apoplexy should have caused his death. They also inquired, whether the appearances observed on dissection might not be the effects of putrefaction. It was allowed that the external might; but not the internal.

"On the part of the prisoner, the celebrated JOHN HUNTER was summoned as a witness: and the judge (the Hon. F. Buller) in summing up the evidence, after stating that four medical witnesses were decided in attributing death to the effects of the laurel water, made the following comments on his testimony:—'For the prisoner, you have had one gentleman called, who is likewise one of the faculty, and a very able man. I can hardly say what his opinion is, for he does not seem to have formed any opinion at all of the matter. He, at first, said he could not form an opinion whether the death was or was not occasioned by the poison, because he could conceive that it might be ascribed to other causes. I wished very much to have got a direct answer from Mr. Hunter, if I could, what, upon the whole, was the result of his attention and application to the subject, and what was his present opinion, but he says he can say nothing decisive. So that upon this point, if you are to determine upon the evidence of the gentlemen who are skilled in the faculty only, you have the very *positive opinion* of four or five gentlemen of the faculty that the deceased died of poison. On the other side, you have what I really cannot myself call more than the *doubt* of another: for it is agreed by Mr. Hunter, that the laurel-water would produce the symptoms which are described. He says an epilepsy or apoplexy would produce the same symptoms; but as to an apoplexy, it is not likely to attack so young and so thin a man as Sir Theodosius was; and as to epilepsy, the other witnesses tell you they don't think the symptoms which have been spoken of, do show that Sir Theodosius had epilepsy at the time.'

The jury retired for about an hour, and then brought in a verdict of guilty, and Capt. Donellan was executed.

It was and still is (says Professor Beck) a prevailing opinion with many, that Sir T. Broughton was not poisoned, and that the captain was innocent. Dr. Male notices this case as "a melancholy and striking instance of the unhappy effects of popular prejudice, and the fatal consequences of medical ignorance." Mr. Phillips, in his

“Theory of Presumptive Proofs,” adduces it as an instance where a man was unwarrantably condemned on circumstantial evidence.*

As a medical man, it might be enquired of Dr. Male, whether the symptoms preceding this death have not been most strikingly and astonishingly verified, as probably originating from laurel-water, by the subsequent investigations of chemists and physicians. Mr. Hunter says, in his testimony, that he had never known laurel-water to act so rapidly as the other medical witnesses described. He had injected it into the veins and into the stomach of animals, *but it never produced so quick an effect*. Who, have subsequent trials proved to be correct on this point—Mr. Hunter, or the other witnesses?

The fact of Capt. Donellan’s having a still is cautiously omitted in Mr. Phillips’ statement of the case, and it is evident from his comments, that they are founded on imperfect information concerning the subject in dispute.

The oil of laurel also acts as a virulent poison, and in a similar manner to the distilled water. The watery extract, however, according to Orfila, is very feeble, and comparatively innoxious in its operation. For the effects of bitter almonds, and of their essential oil, we refer our readers to Art. XLIII. Vol. I. of this work.

The kernels of the peach are very often distilled for the purpose of impregnating *eau de noyau*, and if too strongly impregnated with the oil, it must prove noxious. The late Duke Charles of Lorraine nearly lost his life by swallowing a small quantity of this liquor, and although we are unable to furnish our readers with the particulars, several fatal cases have occurred in England.

QUALITIES AND CHEMICAL PROPERTIES.—The leaves and bark of this tree are of a bitter, somewhat acrid taste, and have a smell characteristic of the volatile oil which they contain. This oil is most abundant in the leaves when gathered in the autumn. It is formed of two parts; one crystallizable, the other uncrystallizable and very poisonous. A particular vegetable principle which has been long known, but has till lately been confounded with gum, exudes nearly in a pure state from this and some other trees. To it, Dr. John gave the name of *cerasin*. *Cerasin* is a solid substance possessing the appearance of gum, and is distinguished by a similar taste. It is usually harder than gum, and not so easily reduced to powder; when put into water, it imbibes that liquid, swells up considerably, and becomes semi-transparent, and gelatinous, but is not in the least soluble. It dissolves in boiling water, but again precipitates when the liquid cools, and remains in the state of a jelly. *Cérasin* is insoluble in alcohol and ether. *Gum Tragacanth* may

* Appendix to his Law of Evidence, p. 30.

be considered as pure *cerasin*. But the most important product of the *Prunus lauro-cerasus* is the volatile oil (*prussic* or *hydrocyanic acid*) which it yields on distillation, and the poisonous effects of which are particularly adverted to when speaking of distilled laurel-water.

Prussic acid, when obtained for medicinal purposes, is however procured in a different manner; and as it is all-important that it be of uniform power, we give Vauquelin's method, which is principally recommended by British practitioners, and resorted to by our best chemists. M. Vauquelin obtains it by decomposing the cyanuret of mercury by sulphuretted hydrogen. To a retort he adapts a globe, containing a mixture of sulphuret of iron and diluted sulphuric acid. The cyanuret of mercury is placed in a horizontal tube, bent to a right angle, at the extremity of which, enters the globe. The cyanuret of mercury is placed in the horizontal part of the tube, near the extremity attached to the globe. Beyond the deuto-cyanuret, fragments of carbonate of lead and of chloruret of calcium are placed, the former to absorb the small quantity of sulphuretted hydrogen which might remain undecomposed by the cyanuret of mercury, the latter to take up the water which the hydrocyanic acid might otherwise carry along with it.

Scheeles' method furnishes an impure product, and when the new Pharmacopœia appears, we hope to find a standard rule for procuring so powerful a medicine.

Prussic acid, at the ordinary temperature, is liquid, transparent, and colourless; its taste, at first of an agreeable freshness, soon becomes acrid and irritating; it slightly reddens the tincture of turnsol. Its odour is powerful and noxious; being insupportable when not mixed with a large proportion of air—it then resembles the smell of bitter almonds. Prussic acid is extremely volatile; in fact, it boils at $26^{\circ}.5$, under a pressure of $0^{\circ}.76$; and at 10° sustains a column of mercury at $0^{\circ}.38$. Its congelation is however easily effected, and takes place at 15° of Farh.: so that when a few drops of this acid are poured upon paper, the portion which evaporates, instantly produces a degree of cold sufficient to crystallize the other: it is the only liquid

which possesses this property. It is but slightly soluble in water, on which account, when agitated with ten or twelve times its bulk of this fluid, it collects on the surface in the manner of oil or ether. It is readily soluble in alcohol. Left to itself in well-stopped vessels, it sometimes decomposes in less than an hour; according to M. Majendie, it can rarely be preserved longer than a fortnight. Messrs. Waugh, in Regent Street, are said, however, to prepare it after the formula of Dr. Nimmo, and warrant it to keep, without deterioration, for six months.

Prussic acid exerts the same deadly powers that the distilled laurel-water does, but in a more eminent degree. One drop, in a pure state, introduced to the tongue of a dog or cat, induces a few hurried inspirations, and death immediately ensues. Dropped into the eye, it produces effects equally sudden. One drop diluted with several drops of alcohol, injected into the jugular vein, will kill the animal as suddenly as if it were struck with lightning; and in animals poisoned in this manner, scarcely any traces of muscular irritability can be detected a few moments after death.

Cases are continually occurring in this country, in which prussic acid has been taken with the express intention of producing death: and in the *Annales de Chimie* for 1814, the following one is recorded. A professor of chemistry left a flask containing alcohol saturated with prussic acid; the servant-maid, seduced by the agreeable smell of the liquor, swallowed a glass of it. At the expiration of two minutes she fell dead, as if she had been struck with apoplexy. The body was not opened.

Orfila also mentions that Professor Scharinger of Vienna, prepared some pure and concentrated prussic acid, a certain quantity of which he diffused on his naked arm, and died a short time after.

Hufeland relates the following case. “D. L., a robust and healthy man, ætat. 36, on being siezed as a thief by the police, snatched a small sealed phial from his pocket, broke off the neck, and swallowed the greater part of its contents. A strong smell of bitter-almonds soon spread around, which almost stupified all

present. The culprit staggered a few minutes, then, without a groan, fell on his knees, and sunk lifeless on the ground. Medical assistance being called in, not the slightest trace of pulse or breathing could be found. A few minutes afterwards, a single and violent aspiration occurred, which was again repeated in about two minutes. The extremities were perfectly cold, the breast and abdomen still warm, the eyes half open and shining, clear, lively, full, almost projecting, and as brilliant as those of the most ardent youth under violent emotion. The face was neither distorted nor convulsed, but bore the image of quiet sleep. The corpse exhaled a strong odour of bitter-almonds. And the remaining liquid in the phial being analysed, was found to be a concentrated solution of prussic acid in alcohol.

Even its vapour should be carefully avoided ; for if respired, it causes considerable pain in the chest, and a feeling of oppression which does not go off for several hours. It also has a very deleterious effect on germination, exerting an influence on living vegetables, almost as powerful as on animals, speedily destroying their vitality.

TESTS.—It having been denied that the presence of the vegetable poisons could be detected, the attention of chemists has been excited to this point ; and in the *Archives Generales* for August 1824, M. Lossaigne has made known the proper method of detecting hydrocyanic acid in the human body. Before devoting himself to the research on this substance in the stomach of animals, he considered it proper to study the actions of the re-agents on this acid. He is satisfied that, by saturating an aqueous solution of hydrocyanic acid, with a small quantity of *potass*, and then touching it with a little *sulphate of iron*, he could detect the $\frac{1}{10000}$ part of the weight of water. If, instead of the sulphate of iron, he employed *sulphate of copper*, and then added a sufficient quantity of muriatic acid to dissolve the excess of oxyde of copper which had been precipitated by the alkali ; the solution assumed a milky appearance, at the time when it only contains $\frac{1}{20000}$ part of its weight of acid. If we dilute this solution in a large quantity of water, the precipitation disappears in a few

hours, and the fluid becomes clear, especially if the liquid in which the precipitation first took place has the muriatic acid a little in excess.

A fact well worthy of remark is, that in making the two-fold experiment by these tests, that made by the sulphate of copper will have its effect disappear, and the fluid will become clear frequently before that which has been treated by the sulphate of iron has acquired the blue colour proper to it. It sometimes happens, that this colour does not show itself for twelve, and sometimes for eighteen hours afterwards.

It is by the help of these tests that M. Lossaigne has discovered, *forty-eight hours after the death of a cat*, the hydrocyanic acid in the intestinal tube. The method of procedure is to distil in a tubulated retort, the fluid that has been obtained from the intestines by cutting them into small pieces. As the hydrocyanic acid is very volatile, it passes over in distillation. When you have obtained about $\frac{1}{3}$ of the fluid, you need not carry the operation further, but saturate the product by potash, and examine it by the two modes before described. The following observation has been deduced from the experiments of this chemist:—

1. That by these two tests he could detect, in a distilled fluid, hydrocyanic acid in the proportion of $\frac{1}{10000}$ to $\frac{1}{20000}$ of the weight of water.

2. That it is possible to detect it, in poisoned animals, more than forty-eight hours after death.

3. That it is always in the viscera, that its vestiges can be discovered.

4. That not the least portion can be detected in the brain, spinal marrow, or heart. Although they give out an odour which causes its existence to be suspected.

From a paper read, however, before the Royal Academy of Medicine at Paris, by M. Itard, it appears that a spontaneous development of prussic acid is occasionally met with in the alvine evacuations. He quoted two cases of the kind. The first subject had inflammation of the intestines; the other symptoms of inflammation of the liver. In both individuals, the

stools smelt strongly of bitter almonds. These facts are certainly highly important in a medico-legal point of view; as the existence merely of the odour of prussic acid in the fæces cannot, under such circumstances, be received as evidence that the person had been poisoned with this medicine. M. Delens related, on the same occasion, several facts, which showed that prussic acid had been found in the perspiration, urine, and expectoration, accounting for the blue colour of those liquids. M. Dupay observed, that cows fed in certain pastures gave blue milk. M. Virey quoted a case where cows fed with the *PRUNUS padus*, exhaled a very strong smell of bitter almonds.

The existence of prussic acid in the excrements of these animals was ascertained by the sulphate of iron. M. Marc related that in Germany some persons had been poisoned by eating sausages, in all of whom a great quantity of prussic acid was spontaneously developed.

TREATMENT.—The effects of this poison are so instantaneous, that when taken with a view to suicide, the fatal purpose is generally at once accomplished. Occasionally, however, serious effects are produced by overdoses in medicine; and under such circumstances, in addition to the means recommended in ART. XXXVII. under the head of *NICOTIANA TABACUM*, we should recommend cold affusion to the head, and repeated doses of ammonia, warm brandy and water, or the spirits of turpentine.

MEDICAL PROPERTIES AND USES.—Dr. Elliotson justly observes in his valuable work,* the hydrocyanic acid can scarcely be called a new medicine, as the leaves of the lauro-cerasus, bitter almonds, and other substances containing it, and from which they derive their virtues, were long ago employed as remedies. Dr. Brown Langrish† tells us that the powder of the dry leaves of the lauro-cerasus was frequently employed in his neighbourhood as a certain cure for ague, “by giving as much as will lie on a shilling, in a glass of white wine, two hours before the fit, and repeating it three times. It is held in great

* Numerous Cases illustrative of the Efficacy of the Hydrocyanic or Prussic Acid in Affections of the Stomach, &c. By John Elliotson, M.D.

† Physical Experiments upon Brutes, p. 122. 1746.

esteem among the poorer sort of people, and is said to have good success." By referring also to the account of *Amygdalus communis*, in our work, it will be seen that Bergius successfully treated it with bitter almonds. Nurses occasionally put a leaf of the lauro-cerasus in pap, to relieve flatulence; while Linneus says, "Lauro-cerasi per Belgium usitatissima pro infuso in morbis depascentibus."* Baylies boasts of its virtues in hectic, and speaks of it as efficacious in attenuating the blood: that it was given during the last century as a remedy for consumption, is evident from a reference to it by Cullen, who says, "that it has been of no use in cases of *phthisis pulmonalis*, or in resolving obstructions of the liver, seems to be concluded upon too few experiments."

Not only every class of agents produces peculiar effects upon the living body, but every individual, besides the general properties of its class, is characterized by peculiar effects. The hydrocyanic acid is a narcotic, but it has not the property of lessening pain in general, nor of procuring sleep in a direct manner like opium; neither has it the power of controlling the pulse like *Digitalis*. In a large dose, short of fatal effects, it, as we have already hinted, occasions insensibility and extreme feebleness of the heart's action: in a smaller, vertigo, faintness, and perhaps rapidity of pulse, sickness, and a sense of constriction at the præcordia: in a still smaller, nausea only, with perhaps momentary vertigo, and even pain of the stomach. Although, in too large a dose it irritates the stomach, it has a remarkable power when properly exhibited of soothing this organ when in a state of morbid irritability. In Dr. Elliotson's extensive practice at St. Thomas's hospital, it has been satisfactorily proved, we understand, to be the best remedy in gastrodynia and in pyrosis; but its powers are most conspicuous in vomiting unconnected with inflammation of this organ. Frequently, as in pregnant women, it is observed to arrest, at the first few doses, perhaps at the very first, vomiting which had existed for several weeks, merely from morbid irritability; and hiccough also has frequently yielded to it. Yet, what is sin-

* *Amœnitates Academicæ*, vol. iv. p. 40.

gular, it will not mitigate pain in the intestines, or entendynia. It cannot therefore be expected to relieve, nor does it even lessen pain generally, in other parts ; and as a consequence, cannot be employed as a general anodyne.

The attacks of pain which occur in angina pectoris, and so closely resemble gastrodynia in situation and course, as probably to be mistaken, are said to be more relieved by it than by any other means.

It is also employed with advantage in the hooping, and what is called spasmodic cough ; i. e. when there is no inflammation or organic disease ; or where these exist, the cough is disproportionately violent. After proper antiphlogistic measures in inflammations of the chest, it has been useful ; and occasionally in consumption, in palliating symptoms ; but as it possesses no power over organic disease, it is not a cure for consumption as some have too fondly wished ; and a physician asserting in the nineteenth century, what time has proved to be incorrect, that it has cured several hundred cases, either proves a disregard of truth, or an ignorance of the symptoms and pathology of this fatal disease—for which he is alike culpable.

Nervous patients it sometimes soothes considerably. But, excepting in affections of the stomach, we may doubt whether it possesses any advantages over opium, properly administered ; and in procuring sleep, relieving pain in general, or as remedy for diabetes, it will be found a poor substitute.

When palpitation depends upon dyspepsia, it, in common with other symptoms, is greatly mitigated by this acid.

The external application of the prussic acid, greatly diluted, has been recommended to sooth irritation of the skin. But it more frequently causes smarting sensations, and a degree of dryness, even when extremely diluted, that renders it worse than useless. Externally, though occasionally beneficial, it is infinitely inferior in its effects to the chloruret of soda, which as a disinfecting agent, and as a cleanser of sloughing ulcers, we particularly recommend.*

DOSE.—The largest dose of the acid generally borne, prepared

* See Scott's *Translation of Labbaraque*, on this subject.

by Vauquelin's method, varies from one to five drops. We should begin with one drop, and increase the dose one drop daily, or every other day, till the symptoms yield, or signs of its disagreeing appear, such as severe vomiting, vertigo, or a sense of debility. The dose should be then reduced to what is borne with comfort. It may be continued any length of time without fear of accumulation of effect, or constitutional operation. It should not be given on an empty stomach; and when several doses are combined, the mixture should be well shaken previously to its administration.

PRUNUS DOMESTICA.—*Common Plum-tree.*

SPEC. CHAR. *Flower-stalks* solitary or in pairs.
Leaves lanceolate-ovate, convolute while young.
Branches without thorns.

Syn.—*Prunus*, n. 1079. *Hall. Hist.* v. 2. 27.

Prunus sativa, *Fuchs. Hist.* 403. *f.*

Prunus domestica, *Lin. Sp. Pl.* 680; *Willd.* v. 2. 995; *Fl. Brit.* 527; *Eng. Bot.* v. 25. t. 1783; *Hook. Scot.* 150; *Ger. Em.* 1497. *f.*; *Woodv.* t. 85.

FOREIGN.—*Prunier*, *Prune*, Fr.; *Prugno*; *Susino*, It.; *Ciruelo*, Sp.; *Ameriera*, Port.; *Ppflaumen*, Ger., *Plommon*, Swed.; *Sliwnik*, Russ.

THE plum-tree is frequently found growing wild in our woods and hedges, bearing flowers in April and May; but the country from whence it originally came has not been ascertained. "Whether," says Sir J. E. Smith, "all our cultivated plums may formerly have originated from the *Prunus insitia*, (Wild Bullace-tree,) its thorns having disappeared by culture, like those of the pear-tree, is a question which perhaps no botanist can ever solve." With respect to the varieties, Parkinson, in 1629, enumerates no fewer than sixty, "all of which," he says, "are to be had of my very good friend Master John Tradescant, who hath wonderfully laboured to obtain all the rarest fruits he can hear of in any place in Christendome, Turkey, yea, or the whole world." Professor Martyn, in his edition of Miller's Gardener's Dictionary, also enumerates sixty varieties of the plum.

The plum-tree rises about fifteen feet in height, and is destitute of spines. The leaves are pale green, oval, serrated, on short footstalks, and when young, convoluted and pubescent underneath: the stipulas are pointed, and placed in pairs at the base of the footstalks. The flowers are large, on short peduncles, with a bell-shaped, deciduous calyx, and five, obovate, white petals. The filaments are numerous and inserted into the calyx: the germen is round and supports a simple style. The fruit is an oblong drupe, internally consisting of a sweet fleshy pulp, and inclosing a smooth almond-shaped nut or stone.

QUALITIES.—Three sorts of this fruit are ranked among the articles of the materia medica; they are all met with in our gardens, but the shops are supplied with them moderately dried from abroad. These are the Brignole plum, or Prunelle, brought from Brignole in Provence, of a reddish yellow colour, and a very grateful sweet, subacid taste; the common or French prunes, called by our gardeners the little black damask plum, and damsons, the larger damask violet plum of Tours, which is seldom kept in the shops, but has generally been supplied by the common prunes. All these fruits possess the same general qualities with the other summer fruits. When perfectly ripe, they are pleasant to the palate, and moderately nutritive; but when eaten too freely they are apt to occasion flatulence, griping, and diarrhoea. They are nearly inodorous, and contain chiefly mucus, saccharine matter, and malic acid.

MEDICAL PROPERTIES AND USES.—The dried fruit, or prunes, are gently laxative, and enter as an ingredient into the *Confectio sennæ* of our pharmacopœias. They are advantageously employed as an article of diet, in costive habits, and in febrile and other diseases.

The fruit of the sloe, (*Prunus spinosa*), is a powerful astringent; and the inspissated juice is a substitute for the Indian catechu. This juice is also largely used in factitious or adulterated port-wine, and the leaves are reckoned among the adulterations of tea in England.



Erythraea Centaurium?

1. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200.

CXVIII

ERYTHRÆA CENTAURIUM.

Common Centaury.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. ROTACEÆ, Lin. GENTIANÆ, Juss.

GEN. CHAR. *Capsule 2-celled. Corolla salver-shaped. Anthers becoming spiral.*

SPEC. CHAR. *Stem nearly simple. Panicle forked, corymbose. Leaves ovate-lanceolate. Calyx half the length of the tube, its segments partly combined by a membrane.*

Syn.—Centaurium minus, Raii Syn. 286; Bauh. Pin. 278; Camer. Epit. 426. f.

Centaurium parvum, Ger. Em. 547. f.; Matth. Valgr. v. 2. 19. f.

Centaurium, n. 648, Hall. Hist. v. 1. 288.

Gentiana Centaurium, Lin. Sp. Pl. 332; Bull. Fr. t. 253; Fl. Dan. t. 617.

Chironia Centaurium, Fl. Brit. 257; Eng. Bot. v. 6. t. 417; Willd. Sp. Pl. v. 1. 1068; Curt. Lond. fasc. 4. t. 22; Woodv. t. 157.

FOREIGN.—*Gentiane centaurelle; Petit Centaurée, Fr.; Centaurea minore, It.; Centaurea menor, Sp.; Tausendgüldenkraut, Ger.; Solotnik polewoi, Russ.*

THIS elegant annual grows spontaneously in most parts of Britain, in dry gravelly pastures, and in woods; flowering in July and August. Dr. Milne found it in great abundance in Charlton Wood, near the seven mile-stone, on the lower road to Woolwich; in the meadows about Eltham and Sidcup; in Shooter's Hill Wood; and in the chalk-pits at Northfleet. We also observed it plentifully in Birch Wood, Kent. A white variety was gathered by Mr. Lawson, near the medicinal well at Cartmel, in Lancashire; and is affirmed by the editor of the third edition of Ray's Synopsis, to be pretty common in Kent and in the isle of Sheppey. It occurs generally throughout Europe, as far northward as Sweden.

The plant rises from a small woody, fibrous root, to the height of ten or twelve inches. The stem is slender, erect, angular, leafy, sometimes branched at the upper part, and when very

luxuriant, from the base also. The leaves grow close to the stalk, in pairs, tending upwards, and are pointed, ovate, or elliptic-lanceolate. Those next the root are numerous, obovate, and form a turf near the ground: they are all smooth, ribbed like those of plantain or soap-wort, and of a bright green colour. The flowers, which open in the day-time and shut at night, are disposed in a beautiful more or less dense panicle, at the extremity of the forked branches. They have a smooth, striated, 5-cleft calyx, about half the length of the tube of the corolla, whose limb is of a brilliant pink or rose-colour, rarely white, and divided into five elliptical spreading segments, succeeded by an oblong cylindrical capsule, that opens by two valves, disclosing a number of small seeds. The filaments are thread-shaped, and furnished with oblong, yellow anthers, which become spiral or three-times twisted, after bursting, as represented by fig. *a*, on the plate. The germen is oblong, bearing a straight style, with a roundish bifid stigma.

The genus *Erythræa*, so named from the red colour of most of the flowers, contains four British species. It differs from *Chironia*, (which was originally appropriated to an African genus,) in habit, in the long tube and short limb of the corolla, and in other less important characters. The term *Centaureum* was bestowed on this species in honour of Chiron the Centaur, the celebrated preceptor of Achilles, who by the testimony of Pliny, (l. xxv. c. 6,) cured with it Hercules's foot, which had been wounded with a poisoned arrow.

QUALITIES.—The flowering tops are principally used in medicine; they are intensely bitter, without any peculiar smell. Their active powers are extracted both by water and alcohol. The decoction with water affords, by inspissation, a bitter extract.

MEDICAL PROPERTIES AND USES.—Common, or Lesser Centaury, as it is sometimes called, has long been celebrated for its medicinal virtues, and is justly esteemed to be among the most efficacious of our indigenous bitters. It is a useful stomachic and antiseptic, and before the discovery of cinchona, was much employed as a useful tonic, in the cure of intermittent and continued fevers. As a bitter, it may be given with advantage in dyspeptic complaints, and in all cases where that class of remedies is indicated. The tops enter as an ingredient into the Portland powder; once in the highest repute as a remedy against the gout, but now very properly discarded from medical practice. The extract agrees in its medical properties with that of gentian, and being less expensive, is perhaps preferable. The *dose* of the powder is from $\mathfrak{z}\mathfrak{ss}$ to $\mathfrak{z}\mathfrak{j}$; of the extract gr. v. to $\mathfrak{z}\mathfrak{j}$; of an infusion, made by macerating $\mathfrak{z}\mathfrak{ss}$ of the dried tops in $\mathfrak{l}\mathfrak{b}\mathfrak{ss}$ of boiling water, of which $\mathfrak{z}\mathfrak{ij}$, may be taken three or four times a day.



Rhamnus catharticus.

CXIX

RHAMNUS CATHARTICUS.

Common Buckthorn.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. DUMOSÆ, Lin. RHAMNI, Juss.

GEN. CHAR. *Calyx* funnel-shaped, bearing the petals. *Berry* of several cells.

SPEC. CHAR. *Leaves* ovate, serrated. *Flowers* 4-cleft, diœcious. *Thorns* terminal. *Berry* with four seeds.

Syn.—*Rhamnus solutivus*, *Ger. Em.* 1337. *f.* 1. 2.; *Dod. Pempt.* 756. *f.*

Rhamnus n. 824.; *Hall. Hist.* v. 1. 366.

Cervispina, *Cord. Hist.* 175. *f.*

Spina infectoria, *Matth. Valg.* v. 1. 143. *f.*; *Camer. Epit.* 82. *f.*

Rhamnus catharticus, *Lin. Sp. Pl.* 279; *Willd.* v. 1. 1092; *Fl. Brit.* 260;

Eng. Bot. v. 23. *t.* 1629; *Hook. Scot.* 80; *Raii Syn.* 466; *Bauh. Pin.*

478.; *Woodv. t.* 114.

FOREIGN.—*Nerprun*; *nerprun purgatif ordinaire*, *Fr.*; *Ramno catartico*; *Spino cervino*, *It.*; *Ramno catartico*; *espina de ciervo*, *Sp.*; *Escambrociero*, *Port.*; *Gemeine Kreuzdorn*, *Ger.*; *Getappel*, *Swed.*; *Korsbærtorn*, *Dan.*; *Pridoroschnaja igolka*, *Russ.*

BUCKTHORN is, perhaps, as well known among herbalists and rustic practitioners as any indigenous medicinal plant of Great Britain. It has been long celebrated for the cathartic qualities of its berries, which are gathered by the common people in some places in considerable quantities, and the juice expressed for the use of the apothecaries. It grows wild in hedges, groves, and thickets, flowering in May, and ripening its fruit in September. It is rather uncommon in the neighbourhood of London; but Dr. Milne found it in some lances betwixt Plumstead and East Wickham; in a chalk-pit betwixt Gravesend and Chatham, and in copses above Purfleet. The specimen from which our figure was designed, grew in the lane leading from the Fox and Hounds public-house to Darenth Wood, two miles beyond Dartford, in Kent. We have also observed it in great abundance in the

hedges near Thames Ditton; and Mr. W. Anderson, of the Botanic Garden, Chelsea, informs us it grows plentifully about Norwood, in Surrey.

Buckthorn is a shrub, which rises to the height of seven or eight feet, with a smooth dark-brown bark, and yellowish wood. The branches are alternate, or nearly opposite, spreading, and each terminating in a strong spine, after the first year. The leaves are simple, entire, ribbed, smooth, finely serrated, and of a bright green colour; the earlier ones downy, and in tufts from the flowering buds; those on the young shoots, opposite, and smooth. The flowers are small, sustained on pedicels, and stand in thick clusters on the extremities of the last year's branches. They are generally of different sexes on distinct plants; the fertile flowers, with the rudiments of stamens, narrow petals, and a deeply four-cleft style; the barren ones with an abortive germen, and broader petals. The anthers are small, roundish, on short awl-shaped filaments, and inserted in the mouth of the four-cleft calyx, opposite to each petal. The berries, which succeed the germen in the female flowers, are black when ripe, globular, of the size of a pea, and contain a green pulp, with *four* cells, and as many seeds, that are smooth, elliptical, convex on one side, and flattened on the other. By this last character they are easily known by druggists, from the fruit of the *Rhamnus frangula*, which has only *two* seeds, and is supposed to be less active. Fig. (*a*) represents a male flower; (*b*) female flower; (*c*) a stamen; (*d*) fruit; (*e*) the section of a berry, showing the four cells; (*f*) the seed.

There are two British species of Buckthorn: Common Buckthorn, already described, and Alder Buckthorn, or Berry-bearing Alder, (*R. Frangula*.) The latter is a shrub, which, like the preceding, grows to a considerable height, with smooth entire leaves, and flowers in May. It is destitute of thorns; and the berries, which ripen in July, are dark purple, each containing two large yellowish seeds. This plant formerly obtained a place in the foreign dispensatories, under the name of *Frangula*. The inner bark, the only part used in medicine, when dried is a drastic purgative; emetic, when green. The berries gathered before

they are ripe dye wool green, and yellow ; when ripe, blue-grey, blue, and green. The bark dyes yellow, and with preparations of iron, black.

The species usually cultivated, or introduced as objects of curiosity are,—the Turkey-berry buckthorn, (*R. infectoria*) ; the shining-leaved buckthorn, or common jujube, (*R. zizyphus*) ; the common alaternus, (*R. Alaternus*) ; the pubescent rhamnus, or Bahama red-wood, (*R. colubrinus*) ; the common Christ's thorn, (*R. paliurus*) ; the pointed-leaved buckthorn, (*R. anoplia*) ; and the Syrian Christ's-thorn, (*R. spina Christi*).

The first is a native of the south of Europe. It is frequent in rough, stony places in Greece, and is regarded by Dr. Sibthorp as the *Λυκίον*, *Lycium*, of Dioscorides. The unripe berries are much used for dyeing, and are imported into England under the name of French berries. They are chiefly used for topical dyeing in calico printing ; but the colour which they communicate is very fugitive ; and they are also used to give the colour to Turkey leather, or yellow morocco. This shrub is very nearly related to the *R. catharticus*, but grows procumbent, not erect, and the leaves are smaller and narrower.

The fruit of the shining-leaved buckthorn, or common jujube, is sold in the market at Canton during the autumn. It is about the size of an olive, of a yellowish-red colour, sweetish, and clammy. In Italy and Spain it is served up at table, in deserts during the winter season, as a dry sweetmeat. It was formerly kept in the shops, under the name of *jujubes*, and recommended in coughs and other pulmonary complaints, but has now justly fallen into disuse.

The natives of Siberia use the wood of an unarmed species, the Rhamnus *Erythroxyton*, or Siberian Red-wood, to make their images, on account of its hardness and colour. According to Osbeck, the poor in China, where the shrub is a native, use the leaves of the *R. teezans*, as a substitute for the genuine tea, and is called by them *Tia*. Another species (*R. paliurus*) which is affirmed by travellers to be one of the most common shrubs in the country of Judea, is supposed by some to be the plant, from which the crown of thorns put upon the head of

Christ, was composed; but Dr. Hasselquist is rather disposed to think it was the *R. spina Christi* of Linneus. The true Lotus of the Greeks (*Rhammus lotus*) is one of the most common shrubs in many parts of Africa. The fruit is described by Mr. Park, as a small farinaceous berry, of a yellow colour, and delicious taste.

QUALITIES.—The odour of the buckthorn-berries is faint and unpleasant; and to the taste bitter, acrid, and nauseous. They are said to contain acetic acid, mucilage, sugar, and an azotized substance.

MEDICAL PROPERTIES AND USES.—The juice of the berries is a violent griping drastic purgative, capable of exerting very injurious effects; and although still employed as a domestic remedy, is now much more used in the practice of veterinary surgeons than by us. A syrup is still prepared from them, as directed by the London and Edinburgh colleges. The London form is preferred on account of the aromatics which enter into its composition, preventing its griping effects. It is still, however, a violent remedy, and produces most unconquerable dryness of the mouth and throat, and intolerable thirst. The *dose* of this, is from six drachms to an ounce, or two ounces.

From the inspissated juice of the ripe berries, with a very small addition of alum, is obtained that green colour so well known by the name of *vert-de-vessie* or *sap green*. Sometimes it is prepared by adding eight pounds of lime-water to twelve pounds of the expressed juice, and six ounces of gum arabic; which mixture is afterwards evaporated into the consistence of an extract, and dried for use.



Ulmus campestris.

ULMUS CAMPESTRIS.

Common Small-leaved Elm.

*Class V. PENTANDRIA.—Order II. DIGYNIA.**Nat. Ord. SCABRIDÆ, Lin. AMENTACEÆ, Juss.*

GEN. CHAR.—*Corolla* 0. *Capsule* compressed, membranous, superior.

SPEC. CHAR.—*Leaves* doubly serrated, rough. *Flowers* nearly sessile, 4-cleft. *Capsule* oblong, deeply cloven, naked.

Syn.—*Ulmus minor*, folio angusto scabro, *Good. in Ger. Em.* 1480. *f.*; *Raii Syn.* 469.

Ulmus, *Dod. Pempt.* 837. *f.*

Ulmus campestris, *Lin. Sp. Pl.* 327; *Willd. v. 1.* 1324; *Fl. Brit.* 281.; *Eng. Bot. v. 27. t.* 1886; *Woodv. 2d. ed.* 710. *t.* 242.

FOREIGN.—*Orme*, Fr.; *Olmo*, It. Sp. and Port.; *Ulmrinde*, Ger.; *Alm*, Dan. and Swed.; *Olm*, Dut.; *Ilim*, Russ.

THE common small-leaved elm is generally understood to be indigenous to the south of England, though the fact is doubted by Evelyn and others. Several superstitious customs were practised on this and other elm-trees by our Saxon ancestors. A canon of King Edgar, in the tenth century, may be thus literally translated. “We decree that every priest shall anxiously advance Christianity, entirely abolish all heathenism, and forbid tree-worship, divination with the dead, omens, charms with songs, man-worship, and many other illusions which are practised in asylums on Elms, (hence perhaps the name Witch or Wych-Elm,) and on various other trees, by which many are perverted who ought not so to be.” Dr. Hunter justly remarks, there can be no stronger proof of its being known at a very early period, than that many compound names of places, of which, the word “elm” forms a part, are to be met with in “Doomsday Book,” the drawing up of which was finished in 1086.

The small-leaved elm grows abundantly in the woods and hedges near London, flowering in April, long before the foliage expands. It is a lofty tree, sending off many round, spreading, crooked, leafy branches, and is covered with a rugged dark-brown bark. The leaves are elliptical, contracted towards each end, doubly serrated, unequal at the base; they are very rough, wrinkled, and veined, stand alternately on footstalks, and are of a dark-green colour. The flowers are small, and grow in numerous dense, round, dark-purple clusters, from the sides of the branches before the evolution of the leaves, each flower being nearly sessile, with an oblong fringed bractea at its base. The calyx is inferior, turbinate, wrinkled, permanent, and divided at the limb into four oblong obtuse segments of a pale brownish red colour. There is no corolla. The filaments are four, twice as long as the calyx, and bearing dark-purple anthers. The germen is oblong, compressed, and supports two styles, which bend outwards, and are terminated by the stigmas, which consist of a downy line along the upper surface of each style. The flowers are succeeded each by an oblong, wedge-shaped flat pale-brown capsule, which has a deep sinus at the extremity, and incloses a single seed. Fig. (a) represents a flower with its bractea magnified; (b) the styles; (c) the capsules; (d) *Scolytus destructor* of the natural size.

Of the elm there are about fifteen species, four of which, besides the *campestris*, are naturalized in Britain, viz.—the broad-leaved elm, called also the wych hasel, (*U. montana*;) the common cork-barked elm, (*U. suberosa*;) the Dutch cork-barked elm, (*U. major*;) and the smooth-leaved, or wych elm, (*U. glabra*.) In the first of these, the leaves are larger than any of the native species; the bark is smooth and even, and the flowers are stalked, and in looser tufts. The common cork-barked elm has stalked, four or 5-cleft flowers, and like the Dutch elm, (which has sessile flowers,) is chiefly remarkable for its quick growth and rough corky bark. The wych elm, which is very common in Essex, has small leaves, smooth on both sides, nearly sessile, 5-cleft flowers, and obovate, deeply cloven capsules. Linneus confounded all the European elms under the name of *Ulmus campestris*.

The elm attains a large size, and lives to a great age. Mention is made of one planted by Henry IV. of France, which was standing at the Luxembourg Gardens in Paris at the commencement of the French revolution. One at the upper end of Church-lane, Chelsea, (said to have been planted by Queen Elizabeth,) was felled in 1783. It was thirteen feet in circumference at the bottom, and one hundred and ten feet high. Mr. Coxe mentions an ancient elm at Raglan Castle, in Monmouthshire, which was twenty-eight feet five inches in circumference near the root. Piffes' elm, near the Boddington Oak, in the vale of Gloucester, was, in 1783, about eighty feet high, and the smallest girth of the principal trunk was sixteen feet. From the planting of Sir Francis Bacon's elms, in Gray's Inn Walk, in 1600, and their decay about 1720, one would be disposed to assign the healthy period of the elm to be about one hundred and twenty years. The health of these must have been, however, affected in some degree by the smoke of London. The superb avenue called the "Long Walk," at Windsor, was planted at the beginning of the last century. Most of the trees have evidently passed their prime. The most profitable age of elms, both for quantity and quality of timber, is supposed to be about fifty or sixty years. The predominance of resin insoluble in water, and not liable to be acted on by the atmospheric air, has been assigned as the cause why the pine and the larch are more durable than the silver fir and the spruce. "It is possible," says Miller, "that the elm is injured by too much humidity in the soil upon which it grows; and that the Dutch elm, which is usually classed as a different species from the common elm, may be merely the common one debased in the humid soil of Holland."

The elm has been always considered as one of the trees which can be most safely transplanted after attaining a considerable size. Evelyn gives several accounts of this species being thus removed into other soils. In the year 1816, a much improved mode of transplanting this and other forest trees, was introduced by Sir Henry Stuart, of Allanton, for an account of which we must refer our readers to his "Planter's Guide."

The *culture* of the elm is effected in different ways; as by seed, suckers, layers, and grafting. All the sorts and varieties are of hardy growth, and will succeed perfectly well in any common soil and exposure, but delight most in a deep rich earth of a stiffish loamy nature, which is rather inclined to moisture, the English sorts having the best situations and soil, and the Wych and Dutch kinds those which are inferior in these respects. The common small-leaved elm is of slower growth than our other wild species, with a harder, more durable, and consequently more valuable wood, which is preferred for most kinds of wheelwright work, pipes for conducting water under the ground, water, pumps, coffins, and various other useful purposes.

The elm-tree is liable to be injured, and is sometimes entirely destroyed by a minute beetle, (*Scolytus destructor*,) which, in its preparatory state, feeds upon the soft inner bark. This insect, which inhabits the elms of France and Germany, as well as England, was particularly prevalent, and caused incalculable mischief in St. James' and Hyde Parks four or five years ago. The leaves of the trees infested by the scolytus first become yellow, the trees themselves then die at the top, and ultimately perish. "From March to September," says Mr. Curtis, (to whose valuable and elegant work we are indebted for the accompanying figure,) "the female may be found upon the trunks of elm-trees, making her way through the bark; after which, she proceeds between the bark and the wood; forming a passage, and depositing her eggs on each side in her course till she is exhausted, when she dies, and may generally be found at the extremity of the channel; when the eggs which are deposited being close to each other, hatch, the larvæ beginning to feed, working nearly at right angles from the path of the parent, proceeding almost parallel to each other, as expressed in the engraving."

In order to check the ravages occasioned by these formidable little animals, Mr. Macleay recommends the infected trees to be brushed over in March, with a mixture of tar and train oil, a certain height above ground, which will destroy the larvæ.* An

* See Macleay in *Edinburgh Philos. Journ.* No. XXI. July 1824, p. 123. Curtis *British Entomology*, v. 1. t. 43.

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insect, similar in its economy, but belonging to a different genus, the *Bostrichus typographus* of Fabricius, and known in Germany under the name of *Wurm trokniss*, (decay caused by worms,) occasioned terrible devastation among the pines, in the Hartz forest about the year 1783.

QUALITIES AND CHEMICAL PROPERTIES.—The inner bark, which is the part used in medicine, has a yellowish colour, and a mucilaginous bitter astringent taste, without smell. The bark in the spring is most advantageously striped from the small, but not from the smallest branches; and in autumn from the branching roots. The decoction, when evaporated, leaves a little semi-transparent substance, soluble in water, but insoluble in alcohol and ether, which Dr. Thomson, in his Dispensatory, regards as *ulmin*; or rather, as a peculiar modification of mucus, combined with extractive, gallic acid, and super-tartrate of potass. *Ulmin* is the name given to a peculiar substance which was discovered by the celebrated Klaproth, in the bark of the elm. It exists in the bark of almost all trees, but is generally obtained by spontaneous exudation from the elm. It may be prepared by acting on elm-bark by hot alcohol, and cold water; and then digesting the residue in water which contains an alkaline carbonate in solution. In the solid state it has the appearance of gum. It has no taste, and is soluble, though sparingly, in water and alcohol. The alkaline carbonates dissolve it more abundantly, and it is precipitated from its solution in them by acids and metallic salts. Dobreiner states, that gallic acid is converted into ulmin, by dissolving it in ammonia, and exposing the solution to oxygengas. Ulmin has not hitherto been applied to any particular use.

MEDICAL PROPERTIES AND USES.—The decoction of elm-bark has been recommended in various cutaneous diseases; particularly of the herpetic and leprous kind. Banau recommends its use in fluor albus, chronic rheumatism, scrofulous affections, tinea capitis, scurvy, and in old inveterate ulcers. In Vol. II. of the Medical Transactions, five cases of inveterate eruptions are narrated by Dr. Lysons, as having been cured by this remedy; but it is doubtful whether adjuncts are not the

causes of relief. Dr. Lettsom also cured what he supposed to be the *lepra ichthyosis* of Sauvages by it; but it is now fallen into disuse as a remedy of very little power. We think, however that it deserves more extensive trials before we discard it from our materia medica. The decoction (*Decoctum Ulmi* of the pharmacopœias) is made by boiling four ounces of the inner bark in four pints of water down to two pints. Dose from four to six or eight ounces twice a day.

The bark of the elm dried and ground to powder has been mixed with meal, in Norway, to make bread in times of scarcity. The leaves also afford a pleasant nourishment to cattle, and in some parts of Hertfordshire the poor people gather them in sacks for this purpose.



Diosma crenata.

DIOSMA CRENATA.

Crenated Diosma.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. MULTISILIQUÆ, Lin. RUTACEÆ, Juss.

GEN. CHAR. *Petals* five. *Nectary* of five scales crowning the germen. *Capsules* three or five, connected. *Seeds* in an elastic bivalve arillus.

SPEC. CHAR. *Leaves* ovate-lanceolate, crenate, punctured underneath; *flowers* solitary.

Syn.—*Hartogia betulina*, Berg. Cap. 67.

Diosma crenata, Lin. Sp. Pl. 287; *Amæn. Acad.* 6. p. 308; *Houttuyn Lin. Syst.* 3. p. 286; *Willd.* 2. 1138; *Thunb. Dissert.* p. 14; *Ait. Hort. Kew.* v. 2. p. 32. *Bot. Cab. n.* 404.

ALL the species of this genus are shrubs, and natives of the Cape of Good Hope. The subject of the present article was introduced by Mr. Francis Masson in the year 1774. It forms a thin branching shrub, flowering in its native soil throughout August, September, and October. It is still very rare in our collections; but blossoms occasionally in March, at Messrs. Lodiges, at Hackney. For its culture the soil should be sandy peat, and the plant requires the usual greenhouse protection in winter.

The plant is perennial, erect, everywhere smooth, and rises about two feet high; the branches are round or somewhat angular, loose, wand-like, and of a purplish colour. The leaves are opposite, scattered, ovate, pointed, of a dark green colour above, paler underneath, crenated, and full of small transparent punctures, particularly at the edges between each tooth. The flowers are solitary on short pedicels, delicate, white, or of a pale reddish tint, and arise at the ends of short opposite lateral shoots. The

calyx consists of five deep ovate, acute permanent segments. The corolla is composed of five elliptic-oblong bluntish segments, slightly spreading. The nectaries are five linear-lanceolate scales crowning the germen. The filaments are five, awl-shaped, bearing ovate, incumbent anthers. The germen is superior, turbinate; the style erect, the length of the stamens, with a simple stigma. The capsulc is ovate, containing an oblong solitary seed, inclosed in an elastic arillus.

QUALITIES AND CHEMICAL PROPERTIES.—The odour of the whole of this plant is very strong and peculiar. It affords an essential oil, which resembles a mixture of oil of rue, cubebs, and camphor. The extractive matter is slightly bitter and mucilaginous. It yields to water, on long-continued boiling, a quantity of mucilage; and the essential oil, which is imparted to boiling water by infusion, is dissipated by decoction. To an analysis by M. Cadet, jun. the leaves of this plant yielded,*

| | | | |
|---------------|---|---|-------|
| Essential oil | . | . | 0.665 |
| Gum | . | . | 21.17 |
| Extractive | . | . | 6.17 |
| Chlorophylle | . | . | 1.10 |
| Resin | . | . | 2.151 |

MEDICAL PROPERTIES AND USES.—To this plant the natives of Southern Africa ascribe incredible virtues in numerous diseases, and of a very opposite nature. To Dr. Rcece of Bolton Row, we are indebted for the *Krameria triandra*, as an article of our authorised materia medica, which as an astringent tonic is much prized by Sir H. Halford, at whose recommendation it found a place in our pharmacopœia. The former gentleman, whose therapeutical knowledge is deservedly esteemed, was also the first to excite the attention of British practitioners to the *D. crenata*; and as the subsequent experience of several able men in Ireland has confirmed its efficacy, it now ranks amongst the officinal drugs of the Dublin pharmacopœia. For several years it appears to have been successfully prescribed in

* Journ. Chim. iii. 44.

Holland, for rheumatism and inflammatory affections of the membranes, particularly of the bladder, urethra, prostate gland, and rectum. The natives of the Cape, from whom the Dutch derived their knowledge on the subject, are partial to the spirit of buchu, made by distilling the leaves in the dregs of wine, which they term buchu-brandy, and regard as a sovereign remedy for all chronic diseases, and even acute ones, of the stomach and bladder, but especially spasmodic affections of the stomach and intestines. By referring to Burchell's travels in Africa, it will be found, that the Hottentots apply a decoction of buchu leaves to fresh wounds, and also use them as a cosmetic, which is referred to by Thunberg, when speaking of the uses of the plants belonging to this genus: "Inserviunt imprimis *uniflora*, *pulchella*, *crenata*, et *betulina*, quarum folia inter lapides in pulverem redigunt Hottentotti, eoque, cognomine Buchu, corpus pinguedine ovina arte inunctum adspargunt, unde odor eorum graveolens et insuetus valde ingratus."*

The *Diosma Crenata* appears to be an excellent aromatic stomachic, and is very efficacious as a diuretic. It also exerts very powerful effects on the urinary apparatus, as irritative affections and chronic inflammations of the bladder and urethra, which so often follow mismanaged gonorrhœa, or are consequences of retention of urine, diseased prostate gland, stricture of the urethra, the action of calculi, or the rude use of the bougie. Dr. M'Dowall† has given many cases of these kinds in which it has been eminently successful, and the correctness of his assertions is fully borne out by Dr. Cumming, also of Dublin. We are also in the habit of employing the infusion for the same diseases, and are generally well satisfied with the results. An eminent general practitioner (and it is from this class of the profession that we naturally look for the advancement of our therapeutical knowledge) has favoured us with the following observations, with which we conclude: "I have often found the infusion of buchu-leaves, taken internally and applied externally, extremely beneficial for rheumatism. In one case of long stand-

* Dissert. Botan. de *Diosma*, p. 20.

† Vide Dublin Medical Transactions.

ing chronic rheumatism, the patient, an elderly man, was suffering severely in the loins and extremities, as also from a most distressing irritative affection of the bladder and urethra. A wine glassful of the infusion, made with an ounce of the leaves to a pint of boiling water, taken three times a day, not only reduced the rheumatic pains, but entirely removed the complaint of the bladder and urethra, which had been ascribed to a diseased state of the prostate gland. These sedative effects, so remarkably displayed, induced me to try it in similar affections of the rectum, and the favourable results fully confirm the opinion I had anticipated."

OFF. PREP.—Inf. Diosmæ Crenatæ. D.



Echinusa tinctoria.

ANCHUSA TINCTORIA.

Dyer's Alkanet.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. ASPERIFOLIÆ, Lin. BORAGINÆÆ, Juss.

GEN. CHAR. *Corolla* closed with concave obtuse valves; funnel-shaped; tube straight, tumid below. *Seeds* concave at the base.

SPEC. CHAR. Downy; *leaves* lanceolate, obtuse; stamens shorter than the corolla.

Syn.—*Anchusa monspeliiana*, Bauh. Hist. v. 3. 584.

Anchusa parva, Lob. Icon. 578.

Anchusa prima, Matth. Valgr. v. 2. 341,

Lithospermum tinctorium, Andr. Repos. t. 576.

Buglossum radice rubrâ, sive *Anchusa vulgatio*, Tourn. Inst. 134.

Anchusa tinctoria, Desfont. Atlant. v. 1. 156; Ait. Hort. Kew. ed. 2. v. 1. 290; nec Linn. Fl. Græc. Sibth. v. 2. t. 166.

Αρχουσα, Diosc.

FOREIGN.—*Le buglos teignante*, Fr.; *Ancusa tintoria*, It.; *Anchusa de tinte*, Sp.; *Farber-Ochsenzunge*, Ger.; *Orkanette*, Dan. and Swed.

THIS plant is a perennial, a native of the south of Europe, and was found by Sibthorp in Greece. It is sometimes raised in our gardens; but the roots do not acquire in this country the fine red colour for which the foreign are prized. It has long been extensively cultivated for medicinal purposes in the neighbourhood of Montpellier, in France. It flowers from June to October.

The root is woody, long, round, tapering, branched, and covered with a blackish-red coloured bark. The herb is all over rough with short bristly hairs, proceeding from small cartilaginous tubercles or warts. Several stems arise from one root; they are round, leafy, branched, panicled above, and about a foot or eighteen inches high. The leaves are oblong, entire, convex above, and keeled underneath; the radical ones forming a turf on the ground, elongated and tapering towards the base; the rest smaller, alternate, slightly dilated at the base, and partly embracing the stem. The spikes are generally in pairs, bent

towards the top, many-flowered, with ovate bractes, twice the length of the calyx. The calyx is reddish, with short hairs, and divided into five oblong-lanceolate segments. The corolla is funnel-shaped, consisting of a straight cylindrical tube, tumid at the lower part, closed at the mouth with five small roundish convex valves, and divided at the limb into five deep, obtuse, equal segments, of a deep azure colour. The filaments are shorter than the corolla, bearing roundish anthers: the germen four, with awl-shaped styles, nearly as long as the tube, with a small notched stigma. The seeds are oblong, and rough with tubercles. Fig. (a) the flower somewhat magnified, showing the stamens and arched valves; (b) the calyx and pistil a little magnified; (c) the seed.

QUALITIES AND CHEMICAL PROPERTIES.—Alkanet root, as met with in commerce, is inodorous and nearly tasteless. The red colouring matter, according to Pelletier, with which the cortical part abounds, is of a brownish red colour, runs into a mass, which breaks with a resinous fracture, is soluble in alcohol, ether, and fat oils, which it colours red, while they preserve their transparency. It imparts scarcely any colour to water. It forms blue combinations with potass, soda, barytes, strontian, and lime: is decomposed by the action of concentrated sulphuric acid; and is converted into oxalic acid by nitric acid. When precipitated from its alcoholic menstrea by the aid of metallic solutions, it forms an excellent varnish. M. Chevreul has lately discovered in it and in the root of the *Viburnum opulus* a new acid, which he terms *Phocénique*. Sometimes the roots of the *Onosma echioides*, and *O. tinctoria*, are substituted for the *Anchusa tinctoria*. Bergius also states that the roots of the *Borago officinalis* are sometimes boiled in a decoction of Brazil wood, and sold for alkanet: the fraud, however, is easily detected by inspection, and by the substitute failing to yield its colour to the fixed oils.

USES.—This plant was formerly administered as an astringent; but has given place to medicines much more worthy of regard. It is useless, excepting as a colouring matter for oils, lip-salve, and plasters.



Arnica montana L.

ARNICA MONTANA.

Mountain Arnica, or Leopard's-Bane.

Class XIX. SYNGENESIA.—Order II. POLYG. SUPERFLUA.

Nat. Ord. COMPOSITÆ DISCOIDEÆ, Lin. CORYMBIFERÆ, Juss.

GEN. CHAR.—*Receptacle* naked. *Seed-down* simple. *Calyx* with equal leaflets. *Cororollules* of the ray have five filaments without anthers.

SPEC. CHAR.—*Leaves* ovate, entire; stem leaves opposite, in pairs.

Syn.—Alisma, *Matth. Diosc.* 934; *Bauh. Hist.* 3. pars. 1. p. 20.

Chrysanthemum latifolium, *Dodon.* 263; *Ger. Em.* 742.

Caltha alpina, *Tabern.* 336. ed. *Germ.* p. 714.

Doronicum Plantaginis folio alternum, *Bauh. Pin.* 185.

Doronicum austriacum quartum, *Clus. Pan.* 522.

Doronicum oppositifolium, *Lamar. Dict.* 2. p. 312.

Arnica foliis conjugatis ovatis integerrimus, n. 90. *Hall. Hist.*

Arnica, *Collin Obs.* v. 1. cum iconc.

Arnica montana, *Lin. Sp. Pl.* 1245; *Willd.* 3. 2406; *Hort. Kew. ed.* 2d. p.

Fl. Dan. t. 63; *Scop. Carn.* n. 1086; *Gærtn. Fruct.* 2. p. 451. t. 173. f. 1.;

Leers Herb. n. 651; *Villars Dauph.* 3. p. 207; *Fl. Franc.* 4. p. 175; *Bot.*

Mag. v. 42. t. 1749; *Woodv.* p. 10.

FOREIGN.—*Doronic à feuilles opposées*, vulg.; *Le tabac des Vosges*, Fr.; *Arnica montana*, It.; *Arnica*; *tabaco de montana*, Sp.; *Wolverley*; *Wolferley*, Ger.; *Wolverley*, Dan.; *Fibler*, Swed.; *Valkruid*, Dut.

THIS is a hardy perennial, a native of the northern parts of the continent of Europe and Siberia, delighting in moist shady situations, and flowering in June and July. It is also found on the Pyrenees, and was cultivated by Mr. Philip Miller in 1759. The specimen from which our figure was drawn blossomed this season at the Botanic Garden, Chelsea, and for it we are indebted to Mr. W. Anderson, F.L.S.

Of the flowers two or three drachms are generally sufficient ; although an ounce has been taken without injury in the course of the day. The extract made from the whole plant is preferred by Dr. Crichton, who gives a drachm in the same time.

In addition to the physical effects which we have already adverted to, it is stated to be capable of indicating the place where any injury has taken place, from an external cause, by augmenting the pain in the part, or renewing it if have ceased to exist. The root seldom produces such disagreeable symptoms as the flowers, but as these are considered auspicious signs, they must not be heeded unless violent. A little of the extract of gentian prevents its effects on the stomach, and co-operates in its beneficial results ; which are generally accompanied by an increase, but not velocity of pulse.



Myrtus Pimenta.

MYRTUS PIMENTA.

Pimento, All-Spice, or Jamaica Pepper.

Class XII. ICOSANDRIA.—Order I. MONOGYNIA.

Nat. Ord. HESPERIDEÆ, Lin. MYRTI, Juss.

GEN. CHAR. *Calyx* 5-cleft, superior. *Petals* five.
Berry two or three-celled, many-seeded.

SPEC. CHAR. *Leaves* oblong-lanceolate. *Flowers* in
 three-forked panicles.

Syn.—*Amomum* quorundam odore *Caryophylli*, *Clus. Exot. lib. 1. c. 17*; *Bauh. Hist. 2. p. 194.*

Myrtus arborea aromatica, foliis laurinis, *Sloanes Jam. v. 2. 76. t. 191. f.*

Caryophyllus aromaticus Americanus, *Pluk. Alin. 88. t. 155. f. 4.*

Piper Jamaicense, *Black. t. 355.*

Bay-berry-tree, *Hughes Barbado. p. 145. t. 10.*

Myrtus Pimenta, *Lin. Sp. Pl. 676*; *Willd. 2. 967*; *Woodv. t. 26*; *Sims in Bot. Mag. t. 1236.*

FOREIGN.—*Poivre de la Jamaïque*; *Pimente*; *Toute-épice*, Fr.; *Gewürzmyrte*; *Jamaika Sfeffer*, Ger.; *Skryddpéppar*, Swed.

THE Pimento or All-spice tree is a native of South America and of the West Indies. It succeeds well in our stoves, if allowed a strong heat, flowering copiously in May and June. It grows abundantly on the hilly parts of the north side of Jamaica, flowering in July, and soon afterwards ripening its fruit. It was cultivated by Philip Miller in 1732, but the date of its introduction is uncertain.

In its native soil this handsome evergreen tree usually rises with a straight or upright trunk to the height of thirty feet, branched towards the top, and covered with a smooth grey bark.

The leaves are opposite, on short footstalks, often two or three together, and vary in size and shape, but are commonly about four inches long, oblong-lanceolate, smooth, shining, pointed, and of a deep green colour. In their recent state, they have an agreeable aromatic taste, and abound in an essential oil, which appears in minute pellucid dots. The flowers are very numerous but small, and are produced in bunches or trichotomous panicles at the extremity of the branches. The calyx is divided into four roundish segments. The petals are four, reflected, and of a greenish-white colour. The filaments are numerous, longer than the corolla, spreading, of the same colour as the petals, supporting roundish white anthers. The style is simple, erect, with an obtuse stigma. The fruit is a smooth, shining, succulent berry, crowned with the persistent calyx, of a black or dark purple colour when ripe, and containing two kidney-shaped, flattish seeds.—Fig. (a) represents the fruit.

The pimento tree begins to fructify in three years after it is planted, and arrives at maturity at seven, when it abundantly repays the patience of the planter. It is particularly fond of a white marly or chalky soil, having a shallow surface of mould, and therefore grows well on those rocky lands which are fit for little else. The berries are picked from the branches in their green state, and are then laid on cloths spread on terraced floors. During the first and second days they are often turned, to be fully exposed to the sun. When they begin to dry they are frequently winnowed, and laid in cloths to preserve them from rain and dews, still being exposed to the sun every day, and removed under cover every evening, till sufficiently dry; which usually happens in twelve days, and is known by the darkness of their complexion and the rattling of the seeds. At this time they appear wrinkled, and are of a very dark brown colour, in which state they are stowed in bags or casks for market. Some planters kiln-dry them, and it seems the most eligible method, when, from abundance of the crop, dispatch and security against rain are so very essential.

The more odoriferous and smaller the berries are, the better

are they reckoned. The leaves and bark of the tree are full of aromatic inflammable particles, on account of which the growers are extremely cautious not to suffer any fire to be made near the walks, for if it once catch the trees, they consume with great rapidity. Nothing, it is said, can be more delicious than the odour of the walks in which the trees are planted, particularly when they are in blossom. The friction of the leaves and smaller branches, even in a gentle breeze, diffuse a most fragrant scent through the air, which is thought to render it very salubrious.

QUALITIES AND CHEMICAL PROPERTIES.—The berries of the pimento have a resemblance in smell and taste to cloves, juniper-berries, cinnamon, and pepper, or rather a peculiar mixture, somewhat akin to them all; hence their name of *All-spice*. The aromatic odour and warm pungent taste reside chiefly in the capsule, or cortical part of the berry. Its virtues are extracted by water, alcohol, and ether. The watery infusion is of a brown colour, and reddens infusion of litmus. With sulphate of iron it strikes a black colour, and lets fall a precipitate. Nitrate of mercury precipitates it of a yellowish brown; superacetate of lead, of a dirty green; and nitrate of silver, of a deep reddish brown colour. It forms a precipitate with the infusion of yellow bark. The sulphuric and muriatic acids redden it, and throw down a rose-coloured precipitate. The nitric acid forms no precipitate, but gives a yellow hue. The alcoholic tincture is rendered milky, and after a time precipitates by water; the ethereal, when evaporated in water, deposits drops of a greenish-yellow volatile oil, a pellicle of pungent nauseous-tasted resin, and some extractive. Hence pimento appears to contain a volatile oil, resin, extractive, tannin, and gallic acid. The essential oil is very grateful, and so ponderous as to sink in water.

MEDICAL PROPERTIES AND USES.—As a condiment pimento is very generally employed; and in medicine is much used as an adjunct to bitters in dyspepsia when attended with much flatulence; also in athritic and hysterical affections. The watery infusion, sweetened with sugar and added to a little milk, is readily taken by children, and is an excellent cordial in malignant

measles, scarlatina, small-pox, and other fevers of a typhoid description. But it is principally employed to cover the taste of other medicines, and to impart warmth.

OFF. PREP.—Aqua pimenta. L. E. D.
Oleum pimentæ. L. E. D.
Pilulæ opiatæ. E.
Spiritus pimentæ. L. E. D.
Syrupus rhamni. L.



Laurus nobilis.

LAURUS NOBILIS.

Common Sweet-bay.

Class IX. ENNEANDRIA.—Order I. MONOGYNIA.

Nut. Ord. OLERACEÆ, Lin. LAURI, Juss.

GEN. CHAR. *Corolla* calyx-like, 4 or 6-cleft. Innermost *filaments* bearing glands. *Anthers* 2-valved, gaping at the base. *Drupe* superior, one-seeded.

SPEC. CHAR. *Leaves* lanceolate, veined, finely reticulated, evergreen. *Flowers* 4-cleft, diœcious, in short axillary clusters.

Syn.—*Laurus vulgaris*, Bauh. Pin. 460; Tourn. Inst. 597.

Laurus, Matth. Valg. v. 119; Bauh. Hist. v. 1. p. 1.409; Camer. Epit. 60; Ger. Em. 1407.

Δαφνη, Diosc. lap. 1. cap. 106.

Laurus nobilis, Lin. Sp. Pl. 529; Willd. v. 2. 479; Ait. Hort. Kew. ed. 2d. 428; Zorn. Icon. 52; Fl. Groca Sibth. v. 4. t. 265.

FOREIGN.—*Laurier commun*, Fr.; *Alloro*, *Lauro*, It.; *Laurel*, Sp.; *Loiro*; *Loriero*, Port.; *Gemeine Lorbeerbaum*, Ger.; *Lagerbärsträd*, Swed.; *Laur*, Russ.

THE Sweet-bay, which is a considerable tree in the South of Europe, appears but as a shrub in this country, producing its flowers only in sheltered situations in April and May. It is a hardy evergreen, a native of Italy and Greece; being without doubt the δαφνη of Dioscorides, and consequently the classical laurel.

In its native soil and climate the Sweet-bay frequently rises twenty or thirty feet in height; much branched, and covered with a smooth, olive-coloured bark. The leaves lanceolate about three inches long, but varying in size, on short, channelled foot-stalks, alternate, pointed, smooth, veined, entire, often waved at the margin, of a firm texture, and deep green colour. The flowers are male and female on different plants; they appear in short racemes, and stand upon short, smooth pedicels at the

axillæ of the leaves. The corolla in both descriptions of flowers, is divided into four oval, concave segments, which stand erect, and are of an herbaceous, or yellowish white colour. The filaments are as long as the calyx; the four outer ones simple, the rest compound, bearing two lateral glands, or abortive anthers. The true anthers are yellow, ovate, bilocular, and composed of two valves, diverging from the stamens, or gaping at the base. The style of the female flowers is very short, and the germen becomes an oval drupe, which is fleshy, very smooth, of a dark purple, almost black colour, and containing a large nut of a similar shape. Fig. (a) the male flower magnified; (b) the drupe or berry; (c) the nut.

QUALITIES.—Both the *leaves* and *berries* have a sweet odour, and an aromatic, astringent, bitter taste. The fruit yields by distillation a brown volatile oil: by expression and boiling in water, green fixed oil, which is recommended to be employed internally; but the article known in commerce by the name of *oil of bays*, is made by boiling the berries in hog's-lard, to which they impart their colour and some little odour. The leaves also contain prussic acid.

MEDICAL PROPERTIES AND USES.—The leaves and berries of this tree are somewhat carminative and sedative. In former times they were employed in flatulent colic, hysteria, and uterine affections, but they are never prescribed by modern practitioners, either internally or externally, and might without loss be expunged from the *materia medica*.



Laurus Sassafras.

LAURUS SASSAFRAS.

Sassafras Laurel.

SPEC. CHAR.—*Leaves* ovate, entire; two or three lobed.

Syn.—*Sassafras* sive *lignum pavanum*. *Bauh. Hist.* 148. 3.

Sassafras arbor ex Florida, ficulneo folio. *Bauh. Pin.* 431.

Sassafras. *Ger. Em.* 1528; *Park.* 1606; *Raii. Hist.* 2. 1568.

Cornus mas odorata, folio trifido, margine plano, *Sassafras* dicta. *Pluk. Alm.* 120. t. 222; *Catesb. Carolin.* 1. t. 55.

Laurus Sassafras. *Sp. Pl. Willd.* ii. p. 348; *Woodv. t.* 31; *Bigelow Amer. Med. Bot.* t. 35.

FOREIGN.—*Laurier Sassafras*, Fr.; *Sassafras*, Port.; *Sassafrassbaum*, Ger.; *Hoam Cham*, Chin.; *Cay Vaug dee*, Cochin Chin.

THE *Sassafras Laurel* is a native of North America, inhabiting every latitude from New England to Florida; and is also said to be found in Cochin China, and in the forests of Mexico and Brazil. It is perfectly hardy, bearing the severity of our northern climate, and is sometimes planted in gardens as an ornamental tree. There is a fine *Sassafras* tree in the royal garden at Kew; and our figure was taken from a specimen growing in the nursery of Mr. Lee, at Hammersmith.

The *Sassafras* tree of the United States, according to Dr. Bigelow, arrives, in favourable situations, to a tall stature and large circumference. The bark of the trunk is much cracked and of a greyish colour; but the young twigs are of a reddish green. The leaves are remarkable for the variety of their form on the same tree; those which proceed first from the bud being oval, entire, and about four inches long; the next of the same form with a lobe on each side, while the last have regularly three lobes. They are alternate, of a bright green colour, petioled, downy when young, but become smoother by age. The flowers, which appear in May and June, immediately under the leaves before they begin to evolve, are small, of a pale green colour, and disposed in short pendant panicles. The flowers are often imperfect as to the parts of fructification, which has led to the

conclusion that different trees produce male and hermaphrodite flowers; but it has been lately ascertained, that the alleged males are only imperfect hermaphrodites. There is no calyx: the corolla is divided into six narrow, greenish-white segments; the filaments are short, bearing heart-shaped anthers; the germen is roundish with a simple style. The fruit is an oval drupe of a deep blue colour, supported on a red incrassated peduncle, nearly two inches in length.

QUALITIES.—The bark of this tree has a fragrant smell, and a very agreeable spicy taste. The flavour of the root is most powerful, that of the branches more pleasant. The flavour and odour reside in a volatile oil, which yielded by distillation, is the heaviest of volatile oils; it is of a light colour, becoming darker by age, and is very pungent. The bark and pith of the young twigs abound with a pure and delicate mucilage. A very small quantity of the pith infused in a glass of water give to the whole a ropy consistence like the white of an egg. This mucilage has the uncommon quality of not being precipitated, coagulated, or rendered turbid by alcohol.

MEDICAL PROPERTIES AND USES.—The bark and wood of this tree were formerly much celebrated in the cure of syphilis, rheumatism, and dropsy. It is now, however, only prized as a warm stimulant and diaphoretic, although it still enters as an ingredient into the “compound decoction of sarsaparilla,” formerly called the “Lisbon diet drink,” which, useful as a sudorific in rheumatism and some cutaneous diseases, derives more efficacy from its other ingredients than from sassafras. The essential oil, mixed with water, may be given in small quantities as an antispasmodic, stimulant, and sudorific; and the mucilage is much used in America, in dysenteric, catarrhal, and calculous affections; also as an external application in the inflammatory stages of ophthalmia.

OFF. PREP.—Oleum Sassafras. L. E. D. Decoctum Sarsaparillæ comp. L. D. Decoctum Guaiaci. L. E. D. Aqua Calcis com. D.



Taurus Cinnamomum

CXXVII

LAURUS CINNAMOMUM.

The Cinnamon-tree.

SPEC. CHAR. *Leaves* nearly opposite, ovate-oblong, 3-nerved; lateral nerves vanishing towards the end. *Panicles* repeatedly compound; petioles smooth.

Syn.—Cinamomum sive Canella Zeylanica. *Bauh. Pin.* 408.

Canella seu Cinamomum vulgare. *Bauh. Hist.* 1446.

The Cinnamon-tree of Ceylon. *Raii. Hist.* 1561.

Arbor canellifera Zeylanica, cortice acerrimo seu prestantissimo, qui cinnamomum officinarum. *Breyn. Prod.* 2. 17.

Cassia cinnamomea sive Cinnamomum. *Herm. Lugd. Bat.* 129. t. 655.

Cinnamomum foliis latis ovatis frugiferum. *Burm. Zeylan.* 62. t. 27.

Karna. *Rheede Malab.* 1. p. 107. t. 57.

Κιννάμωμον, *Dios.*

Laurus Cinnamomum. *Lin. Sp. Pl.* 528.; *Willd.* 2. p. 477.; *Blackw. Herb.* t. 354; *Jacq. Amer.* p. 59. t. 117; *Plenck. Icon.* 312; *Gærtn. Sem.* 2. 69; *Bot. Repos.* 596; *Bot. Mag.* t. 2028; *Woodv.* 1. 80. t. 27; *Nees ab Essenb. Diss. de Cinnam.* t. 1; *Lamarck Ency.* 3. p. 441; *Persoon Syn.* 1. p. 448; *Stokes.* 2. 412.

FOREIGN.—*Le canellier*; *La canella*, Fr.; *Canella*; *Albero della canella*, It.; *Canela*; *Arbol de la canela*, Sp.; *Canella vulgar*, Port.; *Der Zimmet*, *Der Kaneel*; *Zimmetbaum*, Ger.; *Dar-cheeni*, Beng.; *Kura puttay*, Tam.; *Kurundu potto*, Cing.; *Dar Chinie*, Hind.; *Cay que*, Coch. Chin.

LAURUS CINNAMOMUM, the bark of which yields the well known spice cinnamon, is a native of Ceylon, but it is cultivated in other parts both of the East and West Indies. Cinnamon seems to be confined to the torrid zone, or at least, we have no good authority for supposing that it is found much beyond it. Spielman says, it is found in Tartary, and many authors have asserted that it grows in China. Spielman's assertion is now supposed to be incorrect; and Sir G. Staunton tells us that, with the exception of the camphor-tree, none of the laurel genus grows in China; nor does Osbeck include it in his "Flora Sinensis." It grows abundantly on the Malabar coast; the island of Sumatra, particularly about the Bay of Tapanooly; Cochin China; Tonquin, where it is an article of Royal monopoly; the Sooloo; Borneo; Timor; the Nicobar and Phillipine islands; the island of Floris, and Tobago. It has been culti-

vated in the Brazils, the isles of Bourbon and Mauritius, the Siehelle islands, Guadaloupe, Jamaica, and the northern Circars, the island of Du Prince on the east coast of Africa. The cinnamon plant was introduced into Guiana, in the year 1772, from the Isle of France; subsequently it was transported into the Antilles. In Guiana the inhabitants cultivate it in their gardens, and round their cottages. They prepare cinnamon sufficient for domestic purposes, and transmit a small quantity to France. Prior to the year 1790, it was introduced into Cayenne by the French government at a very great expence, and recommended to be cultivated by the colonists; cinnamon has been successfully cultivated in the island of Dominica by a Mr. Buée, where the same gentleman has succeeded in propagating the clove-tree. The cinnamon-tree has long been known in this country, and was cultivated by Mr. Philip Miller in 1768. The Bishop of Winchester, many years since, raised it from seeds ripened in his own hot-house, at Farnham in Surrey. With us it must be kept constantly in the stove. In its native soil and climate, the cinnamon laurel flowers in January and February, and the fruit ripens in June, July, and August.

“ The soil of the cinnamon garden in the neighbourhood of Colombo is a remarkable instance of the silicious kind. The surface of the ground in many places where the cinnamon plant flourishes, is white as snow; this is pure quartz-sand. Below the surface a few inches, where the roots penetrate, the sand is of a grey colour. A specimen of this, dried thoroughly, was found to consist of

| | | |
|----|---|-------------------|
| 98 | 5 | Silicious sand, |
| 1 | 0 | Vegetable matter, |
| 0 | 5 | Water. |

100 9

It may appear surprising that the cinnamon plant should succeed best in so poor a soil; but other circumstances considered, it admits of explanation. The garden is nearly on a level with the lake of Colombo, its situation is sheltered, the climate is remarkably damp, showers are frequent, the temperature is high and uncommonly equable. These are the principal peculiarities to which the excellence of the cinnamon, and the luxuriant growth of this valuable shrub, in a soil apparently so unpromising, may be justly attributed.”*

Captain Percival, in his *History of Ceylon*, confirms the narrative of Dr. Davy.

* *Davy's History of Ceylon*, p. 39.

The fullest account of the cinnamon-tree, and of the preparation of cinnamon, that we have seen in the English language, is by Henry Marshall, Esq. Staff Surgeon to the Forces in Ceylon, and the following details respecting the natural history and description of this valuable spice, is principally derived from his interesting paper, published in Thomson's Annals of Philosophy, vol. x. p. 241 and 346. The tree grows to the height of from 20 to 30 feet; has a slender trunk, from 12 to 18 inches in diameter, irregular, knotty, and covered externally with an ash coloured, thick, rough, scabrous bark; innumerable branches shoot from the stem and give it the appearance of the Portugal laurel. The wood is light and porous like that of the osier, and is used for fuel. Shoots spring up from the roots in great profusion, and form a bush round the stem. The inner bark is reddish. The bark of the young shoots is often beautifully speckled with dark green and light orange colours. The root and branches exude abundance of camphor. The leaves, which stand in nearly opposite pairs on short slightly channelled petioles, are from six to nine inches in length, oblong, smooth, pointed, entire, and three nerved; the lateral nerves vanishing as they approach the point. The young leaves and tender shoots are of a bright red or liver colour, with yellow veins; the former as they acquire maturity become olive, then bright green, and before they fall olive yellow; mature leaves have a strong aromatic odour, and the biting hot taste of cloves. The flowers are in axillary and terminal panicles, white, inodorous, or perhaps somewhat fœtid. The petals are six, ovate, pointed, concave, and spreading; the filaments are in ternaries, shorter than the corolla, flattish, erect, the three innermost glanduliferous at the base, and the anthers are double. The fruit is an oval berry, larger than a black currant, which adheres to the receptacle, like the acorn; when ripe, the skin is bluish-brown, thickly scattered with spots; beneath the skin is a greenish pulp, which is slightly acid, has a terebinthinate odour, and a taste resembling that of the juniper berry. This pulp incloses a nut, which contains an oily, soft, pale rose-coloured, inodorous kernel. Crows and wood-pigeons devour the berries with great

avidity; the productive quality of the seeds remain undestroyed, and by this means the plant is disseminated to a great extent of country, and is found even in the thickest and most impassable jungles.—Fig. (a) represents a section of a flower magnified; (b) a stamen with its gland at the base; (c) the germen and style; (d) the fruit.

Cinnamon is mentioned, Exod. xxx. 23, among the materials which composed the holy anointing oil; and in Prov. vii. 17, Cant. iv. 14, Eccles. xxiv. 15, and Rom. xviii. 13, amongst the richest perfumes. Our species of cinnamon is brought from the East Indies; but as there was no traffic with India in the days of Moses, it was probably obtained from Arabia, or some neighbouring country. We learn, also, from Pliny, that a species of it grew in Syria. “In Syria gigni cinnamum quod caryopon appellant, multum a surecolo veri cinnamomi differens.”—Nat. Hist. l. xii. c. 38.*

Dr. Marshall, whose valuable contributions were published in the Annals of Philosophy, thinks it probable that from the earliest ages, Europe has been indebted to Ceylon for part of its consumption of this article. He thinks that it may have been exported by small vessels belonging to the island, to the Malabar coast, from thence to Sabea, on the south coast of Arabia, by the Arabs. Here the ships belonging to the merchants of Phœnicia and Egypt found large stores of the produce of India; and by this medium the demands from all Europe were supplied. The enormous expence incurred by transporting cinnamon such a circuitous route, must have greatly enhanced its price and prevented its very general use. On some occasions, however, the quantity expended was considerable. At the funeral of Sylla, 210 burthens of spices were strewed upon the pile; and it is probable that cinnamon formed a great part of the spices used on this occasion, the produce of the Moluccas being then but little, if at all, known to the Romans. Nero is reported to have burned a greater quantity of cinnamon and casia at the funeral of Poppœa than the countries from which it was imported yielded in one year.

In 1498 Vasco de Gama landed at Calicut. Indian commerce now took a different route, and the Portugese supplied Europe with the articles which had formerly passed through the hands of the Venetians. Eager to engross the cinnamon trade, the Portugese, early in the sixteenth century, arrived at Ceylon, and obtained leave to establish a factory, which led to the erection of the fort of Colombo. Shortly after the fort had been built, they concluded a treaty with the King of Kandy, wherein he agreed to furnish them annually with 124,000 pounds of cinnamon, in return for which they were to assist the king and his successors, both by sea and land, against all his enemies. The thriving settlements of the Portugese in the East, eventually attracted the attention of the merchants of Holland. Soon after they had

* Salmasius has shown from the authority of MSS, that *camacon*, or *comacon*, is here to be read for *caryopon*. In Solinum, p. 922.

gained a footing in India, they became anxious to engross the cinnamon trade, and early in the seventeenth century found means to ingratiate themselves with the King of Kandy, who invited them to aid him in expelling the Portugese from the islands. In 1612, the king engaged to deliver to the Dutch East India Company all the cinnamon he was able to collect. Peace was concluded between the Portugese and Dutch in 1644. By this treaty a moiety of the trade was ceded to the Dutch. War commenced again in 1652. Colombo surrendered to the Dutch in 1656, and Jaffna, the last place of strength of the Portugese, fell in 1658. After monopolizing the trade for many years, during which time they extirpated the trees in Malabar to enhance the value of the cinnamon of Ceylon, the Dutch found serious rivals in the Chinese, whose cinnamon is inferior to none. To check, therefore, this rivalry, and to render themselves independent of the King of Kandy, they began to cultivate the cinnamon on their own ground at Ceylon; and Dr. Thunberg, who visited Ceylon in 1778, informs us, that by the unwearied exertions of Governor Falck, exceedingly large plantations of cinnamon had been formed, and that the shoots of some of the early plantations had been already three times barked. Political altercations between the colonial government and the court of Kandy occurred about 1792, during which the peeling of cinnamon in the king's territory was greatly interrupted, and the governor declined to send an ambassador to obtain leave, as the King of Kandy required. By the year 1793, the propagation of the cinnamon plant had so far succeeded, that the governor was enabled to furnish the annual investment from the territory of the company, and in a letter to his successor, he congratulates him, that, in future, they would not be under the necessity of flattering the court of Kandy any longer. Ceylon was reduced by a British force in Feb. 1796, and in the latter end of 1797, 13,893 bales of cinnamon were sent to this country. By the treaty of Amiens, concluded in 1802, the Batavian republic ceded to his Britannic majesty all their possessions in the Island of Ceylon, which belonged before the war to the United Provinces. Soon after our countrymen became possessed of Ceylon, they became infected with the Dutch mania, and such serious alarm did they entertain that the market would be overstocked with cinnamon, the produce of the island, that the government, anxious to keep up its price, ordered many of the plantations to be rooted up. In July 1805, General Maitland assumed the government of Ceylon, and one of his first acts was to arrest the disposition of the plantations. He readily saw the propriety of encouraging and increasing the cultivation of cinnamon, and adopted means which have been followed with success. During this government, the annual investments continued gradually to increase, and many hundred acres of new ground were planted. Less dependence was now placed on the supply from the Kandian, territory, which was always uncertain and subject to many impediments. To rival the excellence of the cultivated cinnamon of Ceylon, Dr. Marshall thinks it probable that the Dutch will cultivate it in Java, or some of its dependencies, and he strongly urges the propriety of exerting the powerful means, which circumstances have placed in our power, to cultivate, collect, and export a greatly increased quantity of

this spice with the view of supplying the markets both of Europe and America ; while the trade will be rendered less profitable to our rivals, and less encouraging to them to attempt to monopolize the commerce of this important article.

“ The ground for planting cinnamon is in the first instance prepared, by cutting down the low brush-wood and young trees. The lofty trees are allowed to remain, as the cinnamon is observed to thrive better under their shade, when not too close, than when it is exposed to the direct rays of the sun. The brush-wood is collected into heaps, and burned. The planting commences when the seeds are ripe, generally during the months of June, July, and August. The workmen stretch a line upon the ground, along which they with a mammettee (hoe) turn up about a foot square of earth, at intervals of six or seven feet. The ashes of the burned shrubs and branches of trees are then spread upon the spots of friable earth ; and into each of them four or five cinnamon berries are planted with a dibble. Branches of trees are spread upon the ground, to prevent the friable earth from being scorched, and to protect the young shoots. The young shoots appear above the ground in about fifteen or twenty days. Sometimes the berries are sown in nurseries, and the shoots transplanted in the months of October and November.

“ In favourable situations the shoots attain the height of five or six feet in about six or seven years ; and a healthy bush will then afford two or three shoots fit for peeling. Every second year from four to seven shoots may be cut from a bush in a good soil. Thriving shoots of four years' growth are sometimes fit for cutting.

“ As four or five seeds are sown in one spot, and as in most seasons many of the seeds germinate, the plants grow in clusters, not unlike a hazel bush. In seasons with little rain many of the seeds fail, and a great number of the young shoots die ; so that it is frequently necessary to plant a piece of ground several times successively. A plantation of cinnamon, even on good ground, cannot be expected to make much return before eight or nine years have elapsed. The plantations from which a considerable part of the cinnamon is procured are Kaderang, Ekele, Marendahn (Colombo), and Morotta. These are styled protected plantations, to distinguish them from a number of extensive fields that were planted with cinnamon by the Dutch, and which have since been permitted to be overrun with creepers, brush-wood, &c. and many of the cinnamon plants rooted up by the natives.”

“ On an average of ten years the quantity of cinnamon deposited annually in the magazine at Colombo from the jungles and abandoned plantations of our own territory, including what has been collected in the Candian country, amounts to 1184 bales ; and at Galle, during the same period, 935.

“ The peeling commences early in May, and continues until late in October. The rains which precede, and occur during the southwest monsoon, produce such a degree of succulency in the shoots as to dispose the bark and wood to part easily. The setting in of the rainy weather immediately produces a fresh crop of scarlet or crimson-coloured leaves.

“ The cinnamon harvest begins by dividing the peelers into small parties, which are placed under the directions of an inferior superintendent. When they are to peel in the plantations, each party has a certain extent of the plantation allotted to it. A few of the party cut shoots; while the remainder are employed in the wadu (or peeling shed) to remove the bark and to prepare the cinnamon. When the chaliah perceives a bush with shoots of a proper age, he strikes his ketta (which resembles a small bill-hook) obliquely into a shoot; he then gently opens the gash, to discover whether the bark separates easily from the wood. Should the bark not separate easily, the shoot or branch is not deemed fit for cutting. The chaliahs seldom trust implicitly to any external mark of the proper condition of the plant, and rarely try a shoot until the scarlet leaves have assumed a greenish hue. Some plants never acquire a state fit for decortication. Shoots of many years' growth often bear the marks of numerous annual experiments to ascertain their condition. Unhealthy, stunted plants, are always difficult of decortication; and the cinnamon procured from them is generally of an inferior quality.

“ The peelers do not cut shoots or branches whose diameter is much less than half an inch, or more than from two to three inches.

“ To remove the bark, the peeler commences by making with his kokette, or peeling knife, through the bark, a longitudinal incision, of which the length is determined by the figure of the shoot. A similar incision is made on the opposite side of the shoot, and when the branch is thick, the bark is divided in three or four places. The kokette is next introduced under the bark, which is gradually separated from the wood, and laid aside. When the bark adheres firmly to the wood, the shoot is strongly rubbed with the handle of the kokette. These sections of bark are carefully put one into another, the outer side of one section being placed in contact with the inner side of another, and are then collected into bundles, and firmly pressed or bound together.

“ In this state the bark is allowed to remain for twenty-four hours, or sometimes more; by which means a degree of fermentation is produced that facilitates the subsequent operation of removing the cuticle. The interior side of each section of bark is placed upon a convex piece of wood, and the epidermis, with the greenish pulpy matter under it, is carefully scraped off with a curved knife. During the operation the peeler sits upon the ground, and keeps the bark steady upon the piece of wood with his heel or toes. The bark dries, contracts, and gradually assumes the appearance of a quill or pipe. In a few hours from the time the cuticle is removed, the peeler commences to put the smaller tubes into the larger, and introduces also the small pieces. By this means a congeries of quills is formed into a pipe, which measures about forty inches long. The cinnamon is suspended in the wadu upon open platforms for the first day. The second day it is placed in the sun, on wicker shelves, to dry. When sufficiently dry, it is collected into bundles of about thirty pounds weight each, and in this state deposited monthly in the government magazines at Colombo or Galle.

“ When newly prepared, cinnamon has a most delicious odour: this

odoriferous quality becomes gradually fainter. Cinnamon is at first a light-orange colour, which becomes a shade darker by exposure to the air. The bark of old trees acquires a reddish-brown colour.

“ Shortly after the cinnamon is deposited in the store-houses, the inspection of it commences. The East India Company employ an inspector and two assistants to superintend the sorting and baling of the cinnamon. The manipulation is performed by natives. Each bundle is placed on a table or large bench; the bundle is untied, and the cinnamon examined quill by quill. It is divided into a first, a second, and a third, or rejected sort. The first and second sorts are alone deemed of a quality fit to form the Company's investment. The sorting of cinnamon consists chiefly in detecting or separating what is coarse, and otherwise of a bad quality, including the impositions of the peelers. This is chiefly performed by inspection. Habit soon enables the people employed to discover by a single glance of the eye what is considered defective. Tasting is very rarely had recourse to.

“ The bark of the large shoots, or thick branches of trees, produces coarse cinnamon, which is generally rejected by the sorters. This cinnamon is thick, and has a reddish-brown colour, rough surface, loose texture, and is coarse-grained. It breaks short, shivery, and crumbling. When chewed it is disagreeably pungent, feels gritty, ligneous, and sandy, in the mouth.

“ The peelers occasionally scrape off the external pellicle of this quality of cinnamon. This operation thins the cinnamon and improves the colour, but leaves it with a coarse, rough surface. This quality of cinnamon is always rejected.

“ Cinnamon prepared from the bark of very young and succulent shoots is rejected. It is light straw-coloured, thin, and almost without flavour or taste; and what little aroma it possesses is very evanescent.

“ Mildewed or half-rotten and smoky cinnamon is rejected. When the peelers are overtaken with rain at a distance from sheds, the bark they have previously collected ferments, becomes decayed, and inodorous. In such situations they frequently retire to caves, or very confined huts, where they kindle fires, to procure warmth and to dress their food. The smoke arising from these fires often greatly injures the bark, and renders it unfit to be manufactured into good cinnamon. To increase the weight, the peelers sometimes stuff the quills of cinnamon with sand or clayey earth, thick ill-prepared pieces of bark, &c. &c. When these impositions are suspected, the quills are undone, often broken, and the foreign mixtures removed.

“ This is one of the many causes which prevents the cinnamon from being in quills of nearly equal length. Cinnamon produced beyond the river Keymel on the north, and the Wallawey on the south, is generally condemned. It is light-coloured, greatly deficient in aromatic flavour, astringent, bitter, and has sometimes a taste similar to the rind of a lemon. Even between these limits the cinnamon produced differs greatly in quality. Differences of soil, and exposure, are very evident causes of a difference in the quality of cinnamon. Shoots exposed to the sun are more acrid and spicy than the bark of those which grow under a shade. A marshy soil rarely affords good

cinnamon. It has often a pale yellow shade, approaching to the colour of turmeric. It is loose, friable, and gritty, and its texture coarse-grained. It possesses little of the spiey taste of einnamon. Very often, however, the cause of the inequality of this spice is not apparent; the bark of different shoots of the same bush have often very different degrees of spiciness.

“That which is considered in Ceylon as of the best quality is of a light yellow colour, approaching nearly to that of Venetian gold; thin, smooth, shining; admits of a considerable degree of pressure and bending before it breaks; fracture splintery; has an agreeable, warm, aromatic flavour, with a mild degree of sweetness. When chewed, the pieces become soft, and seem to melt in the mouth.

“The first and second sorts are weighed, and put up into bundles, each weighing $92\frac{1}{2}$ lb. English. Each pareel or bale is firmly bound round with ropes, and then put into double gunnies.

“The outside of the bale is marked with the number of the quality of the cinnamon, and the initial letter of the name of the protected plantation from whence it is proeured. The bales of cinnamon which are proeured in the neglected plantations, the woods of our own territory, or in the Candian country, are marked A. G. (Abandoned Gardens.) The Company export their cinnamon from Colombo or Galle, and the interstices between the bales are filled with black pepper.”

“On some occasions the Ceylon government has directed oil to be extracted from the cinnamon, whose quality did not permit it to form part of the Company’s investment. The proecess is simple: the bark is grossly powdered, and macerated for two days in sea-water, when both are put into the still. A light oil comes over with the water, and swims upon its surface, and a heavy oil, which sinks to the bottom of the receiver. The light oil separates from the water in a few hours; but the heavy oil continues to precipitate for ten or twelve days. The heavy oil, which separates first, is about the same colour as the light oil; but the portion which separates last has a browner shade than the supernatant oil. In future distillations the saturated cinnamon-water is advantageously used, added to sea-water, to macerate the cinnamon. Eighty pounds of newly-prepared cinnamon yield about two ounces and a half of oil, which floats upon the water, and five ounces and a half of heavy oil. The same quantity of cinnamon, if kept in store for several years, yields about two ounces of light oil, and five ounces of heavy oil.”

“The word *easia* is by modern authors used in a variety of senses; but as they do not always define it, or explain the specific nature of the substance they intend to describe, it is often difficult to know in what sense they have adopted the term, or to comprehend the nature of the article concerning which they have been writing.

“This makes the subject extremely embarrassing. It is, however, very generally used in one or other of the three following meanings. 1. To denote the prepared bark of the *laurus casia*. 2. To specify the cinnamon procured from thick shoots, or large branches of the cinnamon-tree, employing it as synonymous with the appellation coarse cinnamon. 3. To denominate the produce of the *laurus cinnamomum*

found in various countries, and to distinguish it from the cinnamon produced in Ceylon.

“With regard to the first specification, it is sufficient to mention that *laurus casia*, dawul kurundu, has been already described, and the distinction between it and the *laurus cinnamomum* pointed out. It is never decorticated. As to the second, it is well known that the rejected cinnamon, or third sort of that prepared in Ceylon, has been imported into England, and sold under the denomination of casia.

“The third specification seems to be founded in a supposition that the *laurus cinnamomum* found out of Ceylon is not equal to that which is produced in this island.”

The true cinnamon of commerce, according to Mr. Marshall, is the produce of young shoots of the cinnamon-tree (*Laurus Cinnamomum*); and casia is the prepared bark of the *old branches of the same kind of tree*. Casia is harder, and more woody than cinnamon. The ancients made use of this kind of bark; but we at present reject it.*

The *casia bud* of commerce is the fleshy hexangular receptacle of the seed of the *L. Cinnamomum*. When gathered young the receptacle completely envelops the embryo seed, which progressively protrudes, but is continually embraced by the receptacle. The buds have the appearance of nails, with roundish heads of various sizes. If carefully dried, the receptacle becomes nearly black, and the point of the berry light brown. The seeds contract by drying, and often fall out; the receptacle is then cup-shaped. When kept long they have a dirty brown colour, and possess very little of the flavour of cinnamon. By distillation they yield an essential oil not inferior to that of cinnamon bark.

QUALITIES AND CHEMICAL PROPERTIES.—Cinnamon bark has a reddish brown colour, and consists of long rolled pieces which splinter when broken. It has a pleasant aromatic smell,

* The following is Mr. Marshall's description of the *Laurus cassia*, of Lin., or Bastard Cinnamon-tree, which abounds in many parts of Ceylon, and is called *dawul kurundu* by the Cingalese. “The trunk is branchy and crooked; leaves ovate-lanceolate, entire, from four to six inches long, and from one to two inches broad; three nerved; the lateral nerves terminate before they join the leaf, and join the middle one; above the petiole smooth, alternate; upper surface dusky green; under surface pale grey; petiole half cylindrical; flat above; flowers inodorous; whitish, verticillated, sessile; calyx common 4-leaved; leaves roundish, concave; contains five distinct flowers with short peduncles; corolla 6-petalled, ovate-concave, nearly equal; filaments nine, shorter than the corolla; style short, stigma obtuse; berry black, round, and about the size of a large currant. The bark of the root is extremely bitter; the leaves of the bark of the trunk and branches, are bitter, and have, in a very slight degree, the taste and odour of myrrh. This is the *canella de matto* of the Portuguese, the wild cancel of the Dutch, and the *laurus myrrha* of Louriero.” It is figured in Nees ab Essenbeck's “*Dissertatio De Cinnamomo*,” t. 3, published at Bonn in 1823, and in the *Botanical Magazine*, t. 1636.

and a pungent but agreeable taste. Its properties are entirely owing to its volatile oil. This oil has a whitish yellow colour, and an extremely pungent taste and smell. It may be separated by infusing the bark in alcohol, and then separating the alcohol from the oil by distillation. When water is distilled off this bark it comes over milky, from the accompanying oil, which it retains with great obstinacy; very little separating till the mixture has stood a very considerable time.

MEDICAL PROPERTIES AND USES.—Cinnamon bark is one of the most grateful aromatic stomachics that we possess, and is reckoned to be stimulant, stomachic, astringent, and tonic. It is principally employed, however, as an adjunct to other remedies, to prevent their griping effect, or to cover their nauseous taste. The oil being a powerful stimulant is sometimes employed to allay spasmodic affections of the stomach and bowels, hiccup, and nausea. It is also applied sometimes to relieve the pain of decayed teeth.

OFF. PREP.—Aqua Cinnamomi. L. E. D.

Spiritus Cinnamomi. L. E. D.

Tinctura Cinnamomi. comp. L. E. D.

Pulvis Cinnamomi, comp. L. E.

LAURUS CAMPHORA.—*Japanese Camphor-tree.*

SPEC. CHAR. *Leaves* elliptical, pointed; 3-ribbed far above the elongated base. *Clusters* axillary, somewhat compound, shorter than the leaves.

Syn.—Camphora officinarum. *Bauh. Pin.* 500; *Blackw. t.* 347.

Arbor camphorifera japonica. *Commel. Hort. Amst. v.* 1. 185. *t.* 95.

Laurus Camphora. *Lin. Sp. Pl.* 521; *Willd. ii. p.* 478; *Jacq. Coll. v.* 4. 221.

t. 3. *f.* 2; *Kæmpf. Amdn.* 770. *t.* 771; *Woodv. t.* 155.

THE Japanese camphor is obtained by distillation from this tree, but the greater part of what is brought to Europe from Sumatra and Borneo is now fully ascertained to be the produce of the

Dryobalonops *Camphora*, a tree belonging to a distinct genus from the laurel. The camphor laurel is a native of Japan, and is sometimes to be seen flowering in our stoves. It is a large tree with ascending branches. The leaves are ovate-lanceolate, entire, smooth, ribbed, of a pale yellowish green colour on the upper surface, on the under glaucous, and stand on long foot-stalks. The flowers are small, white, on long, naked, lateral peduncles. The corolla is composed of six ovate, concave unequal petals, enclosing a tuberculated bristled nectary, which surround the germen. The filaments are shorter than the corolla with round anthers. The germen is roundish with a simple style. The fruit is a small ovate berry, of a dusky brown or reddish colour resembling that of the cinnamon.

For an account of the *Chemical Properties* and *Uses* of Camphor, see the article DRYOBALONOPS.



Centaurea Benedicta

CXXVIII

CENTAUREA BENEDICTA.

Blessed Thistle.

Class XIX. PENTANDRIA.—Order III. POL. FRUSTRANEA.

Nat. Ord. COMPOSITÆ, α, CAPITATÆ, Lin. CINAROCEPHALÆ, Juss.

GEN. CHAR. *Receptacle* bristly. *Seed-down* simple, or feathery, rarely wanting. *Florets* of the radius funnel-shaped, dilated, irregular.

SPEC. CHAR. *Capsules* doubly spinous, woolly, involucred. *Leaves* semidecurrent, toothed, spiny.

Syn.—Cnicus sylvestris hirsutior sive Carduus benedictus, Bauh. Pin. 378.

Carduus benedictus, Camer. Epit. 562; Dod. Pempt. 725; Bauh. Hist. 3. 75. t. 2; Raii Hist. 303; Ger. Em. 1171. 2. f.; Park. 530.

Centaurea benedicta, Sp. Pl. Willd. iii. 2315; Woodv. 119. t. 42; Zorn. Icon. 122.

FOREIGN.—Chardon benit, Fr.; Curda santo, It.; Curdo benito, Sp.; Kardo benedictenkract, Benedikten-Flockenblume, Ger.

BLESSED THISTLE is an annual plant, growing spontaneously in the south of France, Spain, Barbary, and the Levant, flowering plentifully in June, and partially until September. It was formerly much cultivated in our gardens, where it thrives as well as in its native soil. Our figure was made from a specimen obtained in the Botanic Garden, Chelsea.

The root is tapering, whitish, branched, and furnished with many slender fibres. The stems are several, a foot and a half high, trailing, roundish, channelled, reddish, woolly, and branched towards the top. The lower leaves stand upon footstalks, but the upper are sessile, alternate, and somewhat decurrent; the whole are oblong, rough, with short hairs, aculeated, sinuated, or almost runcinate, and armed with many sharp spines; of a green colour, with a strong, whitish midrib, paler underneath and reticulated. The flowers are large, bright yellow, solitary at the ends of the branches, inclosed by an in-

volucrum of ten leaves; of these the five external ones are largest. The calyx is oval, imbricated, smooth, woolly, each scale being terminated by pinnate spines, connected with the involucrum by fine cobweb-like threads. The florets of the ray are small and sterile; those of the disc are hermaphrodite, tubular, unequally divided, and toothed at their upper extremities. The filaments are five, capillary, downy, and inserted in the base of the tube of each floret; the anthers are vertical, linear, oblong, united into a cylinder, and longer than the corolla; the style is filiform, and the stigma cloven. The seeds have a paleaceous receptacle, are oblong, brown, striated, and crowned with a hairy seed down or pappus.—Fig. (*a*) represents a flower detached from the involucrum; (*b*) the same with the scales of the calyx removed; (*c*) a floret, &c. magnified; (*d*) the stamens and anthers; (*e*) the pistil.

QUALITIES.—This plant has little or no smell, but the taste is intensely bitter. “Its virtues are extracted both by water and alcohol. The watery infusion has a pale, greenish-yellow colour, which is changed to deep olive, by sulphate of iron, and an orange-brown by the pure alkalies, although the carbonates do not affect it. *Nitrate of silver* and *superacetate of lead* produce copious precipitates, and are, therefore, incompatible with this infusion.”

MEDICAL PROPERTIES AND USES.—This plant was formerly in such high repute, that it obtained the name of the “*blessed thistle*,” and was given for the plague, worms and numerous other diseases. If we are to believe Simon Pauli, it has no equal in healing obstinate ulcers, and even cancers; and Arnoldus de Villa-nova lauds it in the same extravagant manner. Notwithstanding that it is now little employed, it is a useful medicine, the strong decoction, or infusion, being capable, like the chamomile, of inducing vomiting. The infusion, less strong, taken while warm, produces a copious determination to the skin, while six drachms of the leaves, to a pint of cold water, forms an elegant bitter infusion, which is very efficacious in loss of appetite and dyspepsia. The dose in powder is from ten to forty grains; of the infusion, a wine glassful every four hours.



Pistacia Terebinthus.

CXXIX

PISTACIA TEREBINTHUS.

Chian Turpentine Tree.

Class XX. DICECIA.—Order V. PENTANDRIA.

Nat. Ord. AMENTACEÆ, Lin. TEREBINTACEÆ, Juss.

GEN. CHAR. Male, *Calyx* 5-cleft. *Corolla* 0. Female, *Calyx* 3-cleft. *Corolla* 0. *Styles* 3. *Drupe* 1-seeded.

SPEC. CHAR. *Leaves* pinnate, with a terminal one; leaflets about seven, ovate-lanceolate, rounded at the base. *Flowers* paniced. Segments of the *calyx* awl-shaped, longer than the stamens.

Syn.—*Terebinthus*. *Camer. Epit.* 51; *Ger. Em.* 1433; *Matth. Valgr.* 1. 101; *Raii Hist.* 1577; *Clus. Hist.* 1. 15; *Bauh. Hist.* 1. 279.

Terebinthus vulgaris. *Bauh. Pin.* 400; *Tourn. Inst.* 579; *Duham. Arb.* v. 2. 306. t. 87.

Pistacia Terebinthus. *Lin. Sp. Pl.* 1455; *Willd.* 4. 752; *Villars Dauph.* 2. 547; *Forsk. Ægypt. cent.* 8. p. 219; *Woodv. t.* 153; *Scop. Carn.* 2. n. 1218; *Blackw. t.* 478; *Stokes* 4. 531.

FOREIGN.—*Térébinthe*; *Pistachier sauvage*, Fr.; *Terebinto*, Ital.; *Cornicabra*, Sp.; *Terpentinbaum*, Ger.

THIS is the tree which affords the Chian, or Cyprus Turpentine. It is a native of the south of Europe and north of Africa. It is cultivated in the islands of Scio, (the Chios of the ancients,) and Cyperus, and has been long known in this country as an ornamental plant. There is a fine female tree at Chelsea Garden, near the gate, from which the accompanying figure was designed.

The *Pistacia Terebinthus* is of low stature, and seldom attains the height of thirty or thirty-five feet. The trunk and branches are invested with a dark grey or rugged blackish bark, and bent in all directions. The leaves are pinnate, and consist of three pair of ovate-oblong, entire, smooth leaflets, with an odd one, all of a dark green colour, and somewhat curved backward. They are, in our climate, deciduous, and according to Sir James Ed. Smith appear by Dr. Sibthorp's drawings, to be so in Greece. The young leaves have a beautiful reddish hue, and are thin, smooth, and shining. The flowers which appear in May and

June are on different trees, in large, very compound panicles. In the *male* the calyx consists of one leaf, and is divided into five deep equal segments. There is no corolla. The filaments are four or five in number, capillary, very short, and supporting large, brown, erect, oblong quadrangular anthers, of two cells bursting lengthwise. The *female* are placed on a common peduncle in alternate order, consisting of a calyx of three small squamous segments, and a roundish somewhat triangular germen, supporting three erect styles, with obovate, reflexed, clubbed stigmas. The fruit is a drupe, scarcely bigger than a large pea, ovate, smooth, a little compressed, and of a reddish colour. Galls of the same shape are found on the leaves, and very large pod-like ones, are often produced from the young branches, as the old figures represent.

Cyprus or Chian turpentine, which is furnished by this tree, is procured by wounding the bark of the trunk in several places, during the month of July, leaving a space of about three inches between the wounds; from these the turpentine exudes and is received on stones, upon which it becomes condensed by the coldness of the night, so as to admit of being scraped off before sunrise. To free it from extraneous substances, it is again liquified by the sun's heat, and pressed through a strainer, when it is fit for use. The quantity produced is so very inconsiderable; that large trees, sixty years old, yielded only two pounds nine ounces and six drachms; but in the eastern part of Cyprus and Chio, the trees afford somewhat more, though still so little as to render its price high, on which account it is much adulterated with the other turpentines.

QUALITIES.—The best Chio turpentine is generally about the consistence of thick honey; is very tenaceous, clear, and almost transparent; of a white colour inclining to yellow, and of a fragrant smell; moderately warm to the taste, but free from acrimony and bitterness.

MEDICAL PROPERTIES.—The medical properties of the turpentines has been fully detailed under the article PINUS, in this work, and the Chio turpentine, although more pure than the exudations from this genus of plants, simply possesses the same virtues.



Pistacia Lentiscus.

PISTACIA LENTISCUS.

Mastic Tree.

SPEC. CHAR.—*Leaves* abruptly pinnate; *leaflets* ovate-lanceolate. *Flowers* racemose. Segments of the *calyx* ovate, shorter than the stamens.

Syn.—*Lentiscus*. *Ger. Em.* 1432; *Park.* 1524; *Raii. Hist.* 1597; *Camer. Epit.* 50; *Bauh. Hist.* 1. pars 1. p. 285; *Lob. Ic.* 2. 96; *Clus. Hist.* 84. t. 85; *Dod. Pempt.* 871; *Matth. Vulgr.* 1. 99; *Backw. Herb.* 1. t. 195; *Tourn. Voy.* 1. p. 375.

Pistacia Lentiscus. *Lin. Sp. Pl.* 1455; *Willd. v.* 4. 753; *Hort. Kew. ed.* 2 d. v. 5. p. 381; *Woodv. t.* 412; *Bot. Mag. v.* 45. t. 1967.

FOREIGN.—*Lentisque*, Fr.; *Lentisco*, It. Sp. and Port.; *Der Matixbaum*; *Das ewige Holz*, Ger.; *Sākas*, Turk.; *Roomie mustakie*, Hind.; *Arah*, Arab.

THE Mastic-tree is a native of the south of Europe and the Levant, and appears by Evelyn's *Kalendarium Hortense* to have been cultivated in Britain so early as 1664. It is less hardy than the Chian turpentine-tree, requiring the shelter of a greenhouse, hence it never attains here any degree of perfection. In Italy it is very common, flowering in April, as well as in the island of Scios, where its resin, called mastic, is chiefly obtained, and where different varieties of this shrub are consequently cultivated with care. It differs from every other known *Pistacia* in having no odd leaflet, as well as in its simply racemose inflorescence.

This tree, which seldom exceeds twelve feet in height, and eight or ten inches in diameter, is covered with a smooth brown bark, and towards the top sends off numerous branches. The leaves are abruptly pinnate, consisting of five or six opposite pairs of narrow ovate leaflets, of a dark green colour on the upper, and pale on the under side. They are smooth, pointed at each end, and tipped at the point with a minute curved spine; sessile or closely attached to the common footstalk, which is winged or furnished with a narrow foliaceous expansion on each side,

running from one pair of leaflets to the other. The flowers, which appear in simple axillary racemes in April and May, resemble those of the former species. In the *male* flowers, the calyx is divided into five minute ovate segments; the filaments are four or five in number, very short, and supporting large, brown, erect, quadrangular anthers. The *female*, like those of the male, have no corolla, and are placed upon a common peduncle in alternate order; the calyx consists of three small squamous segments; the germen is egg-shaped, larger than the calyx, and supports two or three styles, with reflexed clubbed stigmas. The fruit is an obovate, smooth reddish drupe, containing a smooth nut. Fig. (a) represents a female flower magnified; (b) male flowers; (c) back view of a female flower, shewing the five-cleft calyx.

In the island of Chios the officinal mastic is obtained most abundantly, according to Tournefort,* by making transverse incisions in the bark of the tree about the beginning of August, from which the resin exudes in drops, and hardening on the trees, or running down and concreting on the ground, is thence collected for use. The time chosen for making these incisions is the first of August, when the weather is very dry; in the following day the mastic begins to appear in drops, which continue to exude till the latter end of September. According to Olivier (Travels in the Ottoman Empire) mastic is gathered in twenty-one villages of the island of Scio; and the incisions, he says, are made from the 15th to the 20th of July, according to the Greek calendar. Cloths are frequently placed under the tree, so that the mastic which trickles from it may not be impregnated with earth and other impurities. By the regulations made in the island, the first gathering cannot take place before the 27th of August. It lasts eight successive days, after which fresh incisions are made in the trees till the 25th of September, and then the second gathering is made, which likewise lasts eight days. After this time the trees are cut no more, but the mastic which continues to run is collected till the 19th of November, on the Monday and Tuesday of every week. It is afterwards

* *Voyage du Levant*, v. i. p. 44.

forbidden to gather this production, which in the twenty-one villages of Scio, amounts on an average to 50,000 *okes*, and even more: twenty-one thousand belong to the aga, who farms this commodity, and are delivered by the cultivators in payment of their personal impost. They are paid for the surplus at the rate of 50 *parats* per *oke*, (nearly 16 sous the pound,) and they are prohibited, under very severe penalties, from selling or disposing of it to any other than the aga who farms it. That of the best and finest quality is sent to Constantinople, for the palace of the Grand Signior; that of the second quality is intended for Cairo, and passes into the harems of the Mamelukes. The merchants generally obtain a mixture of the second and third quality. The lentisc or mastic-tree is raised in various parts of Europe, particularly in Italy and Portugal, but no resin is said to issue from it in these climates.

QUALITIES AND CHEMICAL PROPERTIES.—Mastic, which is brought to us in yellowish semi-transparent brittle grains or tears, is nearly inodorous, except when rubbed or heated, when it exhales an agreeable fragrant odour. It is almost insipid; and when chewed it is soft and tough, like wax, but soon becomes white, opaque, and brittle; hence it is frequently employed by surgeons for stopping carious teeth. In Turkey great quantities of it are chewed for sweetening the breath and strengthening the gums; and it is to this use of the resin as a masticatory, that it is supposed to owe its name. Its specific gravity is 1,074. By digestion with alcohol it is separated into two portions; the one soluble in this fluid, and the other insoluble; the former composes about three-fourths of the whole, and is pure resin; the latter, in most of its properties, resembles caoutchouc. The nature of this inscluble portion was first discovered by Kind, an apothecary at Berlin, whose observations have since been confirmed by Mr. Matthews. Mr. Brand, however, has observed that when this insoluble substance is dried, it becomes brittle, in which respect it differs from caoutchonc. From these experiments, and those of Dr. Wollaston, there can be little doubt that it is a peculiar vegetable principle. Mastic is perfectly soluble in sulphuric ether, from which it is precipitated by alcohol in the form of a

white curd. When distilled, either with water or alcohol, according to Dr. Thomson, no volatile oil is obtained from this substance. It should be chosen clear, of a pale yellow colour, and of an agreeable fragrant odour when heated or rubbed.

MEDICAL PROPERTIES AND USES.—Although the principal consumption of mastic is among varnish-makers, it has been long introduced into medicine under the character of an astringent and diuretic in obstinate coughs, dysentery, fluor albus, gleet, hæmoptysis, dyspeptic complaints, and internal ulcerations; but it probably possesses no powers of any kind but what may be ascribed to its moderately stimulant effect upon the organs of secretion. By means of mucilage and syrup, mastic dissolved in alcohol, is rendered miscible with water, and supposed to possess the virtues of turpentine in an inferior degree. The Arabians regard it as astringent and tonic, and Avicenna speaks of its discutient qualities; he moreover says, “Tussi et sanguine rejectione prodest. Stomachum roborat et jecur.”* In pharmacy it is sometimes employed as an adjunct to pills, to render them less immediately soluble in the stomach, and consequently more progressive in their operation. The wood (*Lentisci lignum*) is received into the materia medica of some of the foreign pharmacopœias, and highly extolled in gouty, hæmorrhagic, and dyspeptic affections.† In the arts mastic is much used, in combination with lac, elemi, and other resins, in the composition of varnishes; and the jewellers mix it with turpentine, and ivory black, and place it under the diamond to add to its lustre. Virey, in his “Histoire Naturelle des Medicamens,” informs us, that from the kernels of the mastic-tree an oil may be obtained which is fit for table; and according to Desfontaines and Duhamel the *Pistacia atlantica*, and *P. chia* yield resins which resemble mastic.

DOSE.—The dose may be from gr. x. to ʒʒ. twice a day.

* See *Canon Med.* lib. ii. tract. ii. p. 189.

† See *Ephem. Nat. Cur.* dec. 3. a. 9. 10. obs. 135.



Origanum vulgare

ORIGANUM VULGARE.

*Common Marjoram.**Class XIX. DIDYNAMIA.—Order I. GYMNOSPERMIA.**Nat. Ord. VERTICILLATÆ, Lin. LABIATÆ, Juss.*

GEN. CHAR. *Calyx* without ribs. *Involucrum* of numerous dilated, flat leaves, one to each *flower*, collected into a spurious *catkin*.

SPEC. CHAR. Heads of *flowers* roundish, paniced, crouded, erect. *Involucral leaves* ovate, smooth. *Calyx* with five acute unequal teeth; throat hairy.

Syn.—*Origanum vulgare spontaneum, Raii. Syn.* 236.

Origanum anglicum, Ger. Em. 666. *f.*

Origanum. n. 233; *Hall. Hist. v.* 1. 102; *Riv. Monop. Irr. t.* 60. *f.* 1.

Origanum sylvestre, seu vulgare. Fuchs. Hist. 552. *f.* *Ic.* 315. *f.*

Majorana ovalifolia. Stokes Bot. Mat. Med. v. 3. *p.* 350.

Origanum vulgare. Lin. Sp. Pl. 824; *Willd. v.* 3. 135; *Fl. Brit.* 639; *Eng. Bot. v.* 16. *t.* 1143; *Curt. Lond. fasc.* 5. *t.* 39; *Hook. Scot.* 184; *Matth. Valgr. v.* 2. 62. *f.*; *Camer. Epit.* 469. *f.*; *Woodv. t.* 164. *Stokes, 3.* 344.

FOREIGN.—*Origan, Fr.*; *Origano, It.*; *Oregano; Erba d' acciughe, Sp.*; *Ourégao, Port.*; *Dosten; Gemeine Doste; Wilder Majoran, Ger.*; *Duschisa; Dork. Rus.*

THE Common Marjoram is a perennial plant, a native of Europe, growing on dry gravelly hills. With us it chiefly occurs in thickets, on chalk or limestone; flowering in July and August.*

* We gathered it plentifully in Ingress Park, near Greenhithe, in Kent, on the 23rd of July, 1129; where we also found the following indigenous plants:—

Daucus sylvestris.
Hypericum perforatum.
 ——— *pulchrum.*
Scrophularia aquatica.
Scabiosa columbaria.
 ——— *arvensis.*
Echium vulgare.

Convolvulus arvensis.
 ——— *sepium.*
Salvia verbenaca.
Anthyllis vulneraria.
Thymus Serpyllum.
Euphrasia officinalis.
Nepeta cataria.

From a brownish, creeping, fibrous root, arise several erect, leafy, angular, purplish stems, about a foot high, clothed with short recurved hairs, and branched and paniced at the summit. The leaves are deflexed, ovate, pointed, dark green, entire, or slightly serrated, minutely fringed, petioled, and grow in pairs at the joints. The flowers are in dense, convex, terminal panicles, of a light purple or rose colour, and furnished with numerous ovate, sessile bractes, one under each flower, rather longer than the calyx. The calyx is tubular, five toothed; like the leaves covered with resinous dots, and fringed at the mouth with dense, very conspicuous white hairs. The corolla is funnel-shaped, with the upper lip erect, nearly flat, bifid, and obtuse; the under in three deep, spreading, nearly equal lobes. The filaments are four, thread-shaped, two longer than the corolla, supporting ovate two-lobed anthers. The style, which is filiform, with a

Cucubalus baccifer.
Sisymbrium officinale.
Pastinaca sativa.
Clematis Vitalba.
Verbena officinalis.
Cichorium Intybus.
Arenaria maritima.
Samolus Valerandi.
Statice Limonium.
Carex divisa.
Scirpus palustris.
 ——— *maritimus.*
Trogopogon porrifolius.
Aster Tripolium.
Plantago maritima.
Roseda lutea.
 ——— *Luteola.*
Fumaria capreolata.
Dipsacus sylvestris.

Ballota nigra.
Senecio vulgaris.
 ——— *Jacobæa.*
 ——— *viscosus.*
Solanum Dulcamara.
Anethum Fœniculum.
Agrimonia Eupatoria.
Centaurea Scabiosa.
 ——— *Calcitrapa.*
Trifolium fragiferum.
 ——— *repens.*
 ——— *arvense.*
 ——— *glomeratum.*
Orchis pyramidalis.
Alopecurus agrestis.
Festuca elatior.
Papaver Rhæados.
 ——— *somniferum.*
Asperula cynanchica.

In the adjoining fields and hedges the botanist will find the corn-field madder, *Sherardia arvensis*; the long-rough-headed poppy, *Papaver Argemone*; the Saint-foin, *Hedysarum Onobrychis*; the Plowman's Spikenard, *Conyza squarrosa*; the officinal soap-wort, *Saponaria officinalis*; the Wild Basil, *Clinopodium vulgare*; the Corn-pheasant's eye, *Adonis autumnalis*; the Rampion, or esculent bell-flower, *Campanula Rapunculus*; the red Valerian, *Valeriana rubra*; the stinking Hawk's beard, *Crepis foetida*; the common Hare's-ear, or Thorow-wax, *Bupleurum rotundifolium*; the great Mullein, *Verbascum Thapsus*, (lately admitted into the Dublin pharmacopœia on account of the reputed anodyne and emolient qualities of the leaves), and also the *V. Lychnitis*, *nigrum*, and *Blattaria*. Upon the chalky cliffs he will meet with the Marsh Gentian, or Calathian violet, *Gentiana Pneumouanthe*; the autumnal Gentian, *G. Amarella*; the bird's nest Listera, *Listera Nidus avis*; the Spider orchis, *Orchis aranifera*; the Fly orchis, *Ophris muscifera*; the green Man orchis, *Aceras anthropophora*, and the perfoliate Yellow-wort, *Chlora perfoliata*. The marshes by the side of the Thames, near Greenhithe, will afford him the whorled Water-milfoil, *Myriophyllum verticillatum*; the wild celery, *Apium graveolens*; the sea Milk-wort, *Glaux maritima*; and the English scurvy-grass, *Cochlearia anglica*.

bifid reflexed stigma, rises from a four-lobed germen. The seeds are four, ovate, and lodged in the bottom of the calyx.—Fig. (*a*) represents a flower magnified; (*b*) view of the corolla, with the stamens, &c.; (*c*) the germen and style; (*d*) stamen and anther.

About eighteen species of this genus, natives of various countries, have been described, and of these the sorts usually cultivated are the common marjoram, *Origanum vulgare*; the pot marjoram, *O. Onites*; the sweet marjoram, *O. majorana*; the winter sweet marjoram, *O. heracleoticum*; the Egyptian marjoram, *O. aegyptiacum*; and the dittany of Crete or Candia, *O. Dictamnus*. Of the first there are varieties, with white flowers, and pale green stalks, with purple flowers and white variegated leaves, which is sometimes cultivated under the title of *pot marjoram*. The fourth sort is at present commonly known by the name of *winter sweet marjoram*, but was formerly called *pot marjoram*, and is chiefly used for nosegays. The leaves resemble those of common sweet marjoram, but the flowers are produced in spikes. The *Origanum Creticum* is the Wild Origanum, or Marjoram of Dioscorides and the modern Greeks. It has much the habit of the Common Marjoram of Britain, but the long slender spikes distinguish it both from that and the *O. smyrnæum*, or Smyrna Marjoram.

QUALITIES.—The leaves and flowering tops of this plant have an agreeable fragrant odour, and a warm pungent taste which resides in an essential oil.

MEDICAL PROPERTIES AND USES.—This plant resembles Wild Thyme, both in its sensible qualities and medicinal properties, and may be used for the same purposes. Its effects are those of a mild stimulant and tonic; and it was formerly held in high estimation as an emenagogue; but is now justly fallen into disuse. The essential oil is sometimes applied to carious teeth on a dossil of lint or cotton, to relieve the pain of tooth-ache. The leaves when dried are used instead of tea, and are said to be exceedingly grateful; and the powder enters as an ingredient into the composition of some cephalic snuffs. For internal use, half of an ounce of the leaves are infused in a pint of boiling water, and drank at intervals, or ℥j. of the powder may be taken twice or thrice a day.

ORIGANUM MAJORANA.—*Sweet Knotted Marjoram.*

SPEC. CHAR. *Leaves* stalked, obovate, downy, obtuse.
Spikes roundish, compact, downy, clustered.

Syn.—*Amaracus*, *Lob. Ic.* 498.

Majorana major, *Ger. Em.* 664.

Majorana vulgaris, *Bauh. Pin.* 224 ; *Raii. Hist.* 538.

Origanum majorana, *Lin. Sp. Pl.* 825. *Willd.* iii. 137 ; *Woodv.* iii. t. 165.

FOREIGN.—*Marjolaine*, Fr. ; *Maggiorana*, It. ; *Origano*, Sp. ; *Majoran*, Ger.

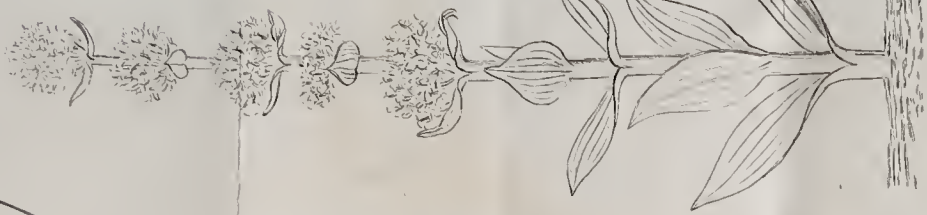
THIS plant, which, like the common marjoram, has long been admitted into the British pharmacopœias, is a native of Portugal and Syria. It is supposed to be the *Amaracus* of the ancients, and is said to have been introduced into this country about the year 1573.*

The stems are numerous, woody, branching and rising more than a foot high; the leaves are ovate and obtuse, entire, petiolate, and downy. The flowers are usually white, with numerous bractes, and are collected into small roundish heads; from which last circumstance it is called knotted marjoram. The calyx is tubular, with five acute teeth. The corolla is funnel-shaped, with the upper lip erect and roundish, and the under divided into three acute teeth. The flowers appear in July.

QUALITIES.—The leaves and tops have an agreeable aromatic odour, and a moderately warm, bitterish taste. In distillation with water, they yield a considerable quantity of essential oil, amounting, according to Baumé, to $\frac{3}{4}$ xvi from 150 lbs. of the plant. This on being long kept assumes a solid form.

MEDICAL PROPERTIES AND USES.—Sweet marjoram is aromatic and tonic, its virtues residing in an essential oil. It is seldom used medicinally; but is a good deal employed for culinary purposes to give relish to soups, omelets, stuffings, &c. The powder of the dried herb is sternutatory, and enters as an ingredient into the composition of some cephalic snuffs. Murray, in his *Apparatus Medicaminum*, speaking of this plant, says, “*Tumores mammarum dolentes, scirrhosos, herba recens, viridis, per tempus applicata, feliciter dissipavit.*”

* See Philips's *History of Cultivated Vegetables*, v. i. p. 337.



Gentiana lutea.

CXXXII

GENTIANA LUTEA.

Yellow Gentian.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Nat. Ord. ROTACEÆ, Lin. GENTIANÆ, Juss.

GEN. CHAR. *Corolla* tubular at the base, destitute of nectariferous pores. *Capsule* superior, 2-valved, 1-celled. *Stigmas* 2.

SPEC. CHAR. *Corolla* 5-cleft, wheel-shaped. *Flowers* whorled, yellow. *Calyx* spathaceous.

*Syn.—*Αστερίας. Renealm. *spec.* 64. *t.* 63.

Γεντιανή. *Diosc. et Græcor.*

Gentiana. *Camer. Epit.* 415; *Fuchs. Hist.* 200; *Dod. Pempt.* 324; *Clus. Hist.* 1. 311.

Gentiana major. *Ger. Em.* 432; *Raii Hist.* 716.

Gentiana major lutea. *Bauh. Pin.* 187; *Park.* 350; *Tourn. Inst.* 80.

Gentiana vulgaris major, Ellebori albi folio. *Bauh. Hist.* v. 3. *p.* 520.

Gentiana caule folioso, foliis ovatis nervosis, floribus verticillatis, rotatis. *n.* 637. *Hall. Helv.*

Gentiana lutea. *Lin. Sp. Pl.* 329; *Willd.* v. 1. 1331; *Scop. Carn.* n. 298; *Allion. Pedem.* n. 365; *Villars Dauph.* 2. 511; *Mill. t.* 139. *f.* 2; *Plenck. Ic.* t. 156; *Woodv.* 3. *t.* 156; *Stokes,* 2. 44.

FOREIGN.—*Gentiane jaune, ou grand gentiane,* Fr.; *Gentiana gialla,* It.; *Jenciana amarilla;* *Gengiba,* Sp.; *Genciana amarella,* Port.; *Der gelbe Enzian;* *Bergenzian;* *Bitterwurzel,* Ger.; *Geele gentian,* Dut.; *Sodrod;* *Entzian-rod,* Dan.; *Baggfota,* Swed.

OF this fine genus more than sixty species have been described by botanists, and six of these, viz. *Gentiana Pneumonanthe*, *acaulis*, *verna*, *Amarella*, *campestris*, and *nivalis* are natives of Britain. They are elegant herbaceous plants, mostly inhabiting alpine regions of the northern hemisphere, and extremely various in size, with flowers generally of a vivid blue. Most of them are perennial; some few are annual; but they are all intensely bitter, especially the roots of the larger perennial kinds. Few of the species are cultivated in our gardens, except the *Gentiana acaulis*, or Dwarf Gentian, distinguished by its humble growth, its large solitary, bell-shaped, exquisitely beautiful, azure blue flowers,

and the *G. lutea*, or Yellow Gentian, neither of which are observed to thrive well in the vicinity of large towns. The latter, which is the officinal species, grows abundantly on the Alps of Switzerland and Austria, the Apennines, the Pyrenees, in the mountainous forests of many parts of Germany, and in North America. It thrives well in this country, in a deep, rich, loamy soil, flowering about the end of June or beginning of July, and few plants are more stately and ornamental. The figure, which represents this interesting plant of the natural size, was made from a fine specimen obligingly communicated to us by the Countess of Bridgewater.

The root is perennial, long, roundish, with numerous thick contorted branches, brown externally, and yellowish within. The stem is simple, erect, hollow, roundish, and somewhat annulated and square at the base near the root, cylindrical and smooth towards the top, and rises three or four feet in height. The lower leaves are petiolate, large, spear-shaped, entire, five or six-ribbed and plaited; those of the stem are concave, ovate, smooth, sessile, almost embracing the stem, and of a yellowish green colour. The flowers are large and handsome, yellow, produced in whorls at the upper joints, and stand upon long peduncles. The calyx, which is a membranous, deciduous spathe, bursts on the side when the flower opens; the corolla is rotated, and divided into five or more long, narrow, spreading, elliptical segments. The filaments vary from five to eight, according to the number of segments, and alternate therewith; they are shorter than the corolla, and furnished with long erect anthers. The germen is conical, crowned with two sessile reflected stigmas; and becomes a conical capsule, divided into two valves, and contains numerous small, compressed, winged seeds. Fig. (a) represents a ripe capsule; (b) a valve of the capsule, containing the seeds; (c) a seed; (d) an outline view of the plant in miniature, to show its general habit.

The scientific name *Gentiana*, was conferred on this genus in commemoration of Gentius, a king of Illyria, who, according to Pliny, first discovered, or at least experienced the virtues of the principal species, the *Gentiana lutea* of Linneus, in the cure of

the plague, which infected his army. The vulgar name *Fell-wort* or *Gall-wort*, is strictly applicable to the whole genus, on account of the extreme bitterness of the plants which compose it.

CULTURE.—Yellow Gentian delights in a deep loamy soil and a shady situation, where it will thrive much better than in a light soil, or an open exposure. It is propagated by seed, which should be sown in pots soon after it is ripe, for if it is kept to the spring it will not succeed; these pots should be placed in a shady situation, and kept clean from weeds. In the spring the plants will appear, when they must be duly watered in dry weather, and kept free from weeds till the following autumn; they should then be carefully shaken out of the pots, so as not to break or injure the roots; and a shady border of loamy earth should be well dug and prepared to receive them, into which the plants should be put, at about six inches distance each way, observing to let the tops of the roots be a little below the surface of the ground, then press the earth close to the roots; after this they will require no farther care, but to keep them constantly clean from weeds; and if the following spring should prove dry, they should be constantly watered, which will greatly forward their growth. In this border the plants may stand two years, by which time they will be fit to transplant where they are designed to remain; therefore in autumn, so soon as the leaves decay, they may be removed; but as the roots of these plants run deep into the ground, like carrots, there must be great care taken in digging them up not to cut or break their roots, for that will greatly weaken, if it does not kill them. After the plants are well fixed in their places, they require no culture, but to dig the ground about them early in the spring before they begin to shoot, and in the summer to keep them clean from weeds. The roots of these plants will continue for many years, but the stalks decay every autumn; the same roots do not flower two years together, nor seldom oftener than every third year; but when they flower strong, says Professor Martyn, to whose edition of Miller's Dictionary, we owe the preceding remarks, they make a fine appearance; and as these delight in moist shady ground, where but few ornamental plants will thrive, they should not be

wanting in good gardens. The dried roots are imported into this country chiefly from Germany; but we know no reason why the plant should not be cultivated in our physic gardens.

QUALITIES AND CHEMICAL PROPERTIES.—Gentian roots are long, and contain so much water, that when dried, they are much wrinkled. Externally they are brown, internally spongy, and of a deep yellow colour. The best roots are of a middling size, of a lively yellow colour, tough, and most free from fibres. The older and larger roots are more porous; the younger and tender more compact. Neuman obtains from ʒxvj. of the root, by means of rect. spirit, ʒviii. of resinous extract; and from water, ʒix. of a gummy one. Sometimes the *Thora valdensis* of Ray, or the *Aconitum pardalianches* of Bauhine, is sold for the Gentian. It is known from the true Gentian by a paler colour externally, having longitudinal wrinkles; its texture is closer than that of Gentian, whitish within, and not bitter; but when chewed, only mucilaginous. It is the *Ranunculus Thora*, Lin. Sp. Pl. 775. Gentian yields its virtues to ether, alcohol and water. A singular circumstance is connected with the analysis of this root: M. Henry and M. Caventou being employed at the same time in this pursuit, without being aware of each other's proceedings; both discovered the substance termed *gentianine*, the principal on which the bitter and medicinal properties of the Gentian seem to depend; and so little did they differ in the results of their investigations, that they resolved to promulgate their labours together.*

Preparation of Gentianine.—The powder of gentian is to be exposed to cold ether, which at the end of forty-eight hours furnishes a greenish tincture; this being filtered, poured into an open vessel, and exposed to heat, if the liquor be sufficiently concentrated, upon cooling, settles into a yellow crytalline mass, possessing a decided smell and taste of gentian. This mass is then to be treated with alcohol until it ceases to yield a citron colour. The washings are to be mixed, and exposed to a strong heat, and the yellow crystalline substance begins to re-appear, assuming at the close of the evaporating process a solid mass, extremely bitter. Taken up again by weak

* A remarkable fact, says Mr. Magendie, on two accounts—first, as proving the degree of perfection to which the modes of vegetable analysis have of late years reached; and secondly, as illustrating the change that the progress of science has wrought upon its votaries. Had such a contingency happened 100 years back, the consequence would have been an obstinate dispute between the parties. In the present day it has been the cause of pleasure to them, each finding the importance of his discovery confirmed by that of the other.

alcohol, it is partially dissolved, a certain portion of oily matter remaining separate. This last spirituous solution, besides the bitter principle of the gentian, contains an acid substance, and the odorous principal also.

Upon evaporating this liquid to dryness, washing the residue in water, adding a little calcined and well-washed magnesia, boiling and evaporating in a water-bath, the greater part of the odorous matter of the gentian is driven off; the acidity is removed by the magnesia, and the bitter principle remains, partly free, and partly in a state of combination with magnesia, to which it imparts a beautiful yellow colour. Then, upon boiling this magnesia with ether, the greater part of the bitter principle is obtained pure, and is insulated by evaporation. If it be wished to separate the greater part of the bitter principle which remains in the magnesia, in a fixed state, and which could not be taken up by the ether, we may treat it with oxalic acid, in a quantity sufficient to produce slight acidity. This acid unites with the magnesia, and sets the bitter principal at liberty, which may be obtained in the manner already pointed out.

Properties of Gentianine.—This substance is yellow, inodorous, possessing very strongly the aromatic bitter taste of the gentian, which is much increased by solution in an acid. It is highly soluble in ether and in alcohol, and separates by spontaneous evaporation in the form of very small yellow crystalline needles. It is much less soluble in cold water, which nevertheless it renders exceedingly bitter: in boiling water it is more readily dissolved. Diluted alkalis deepen its colour very much, and dissolve rather more of it than water will alone.

Acids diminish its yellow colour in a very remarkable manner. With sulphuric and phosphoric acids the solution is almost colourless; but yellowish with the weaker acids, such as the acetic. Concentrated sulphuric acid carbonizes it and destroys its bitterness.

Exposed in a glass tube to the heat of boiling mercury, gentianine sublimes in the form of small yellow crystalline needles, and is partially decomposed. It has no sensible effect on turnsol, either when blue, or reddened by acids—being apparently neutral.

Action of Gentianine on the Animal and Human System.—M. Magendie has ascertained by experiment that this substance is not possessed of any poisonous qualities; several grains injected into the veins produced no effect. He himself swallowed two grains dissolved in alcohol, and was merely sensible of the extreme bitter taste, and a slight sensation of heat in the stomach.

Medicinal Employment.—The tincture seems to be the preferable form for administration; and it may be made in the following manner:

| | | | |
|---------|----------------|-------|-----------|
| Take of | Alcohol at 24° | . . . | 1 ounce. |
| | Gentianine | . . . | 5 grains. |

Mix.

This may be substituted for the tincture of gentian, and employed in the same circumstances.

Syrup of Gentianine.—Take of Simple syrup . . . 1 pound.
 Gentianine . . . 16 grains.

Make a syrup.

This is one of the best bitters that can be employed in scrophulous affections.

MEDICAL PROPERTIES AND USES.—The root of this plant has been used from time immemorial as a valuable tonic, and occupied the first place as a febrifuge before the discovery of the Cinchonas. In large doses it is somewhat aperient; but in smaller ones is found highly beneficial in dyspepsia, gout, hysteria, and jaundice; in cholosis and torpor of the intestinal canal; indeed, in all those cases of debility in which it is generally considered proper to administer tonics. The infusion, as ordered by the London College, is the most elegant and proper mode of administering it, and forms an excellent medium for the administration of chalybeates, mineral acids, and neutral salts, with which it is often necessary to combine it. The following is the form :

Take of, Gentian root sliced, orange peel bruised, coriander seeds bruised, of each *a drachm*.

Fresh lemon peel *two drachms*, boiling water twelve *fluid ounces*.

Macerate for an hour in a vessel, lightly covered, and strain.

“It is given,” remarks Dr. T. Thompson, “in dyspepsia and chlorosis, united with chalybeates, or with alkalies;” in gout and diarrhœa, with absorbents and atonic aromatics; in jaundice, with rhubarb and saline purgatives; and in dropsies, with squills and neutral salts. The dose is a small wine-glass full three or four times a-day.

A strong simple infusion is known to possess antiseptic properties, and has therefore been applied externally to putrid ulcers. Before hops had established their reputation, this, with many other bitter herbs, was occasionally used in brewing.

Though the root of the *Gentiana lutea* is one of the most valuable bitters now employed in medicine, the roots of several other species are supposed to be equally efficacious. The dwarf autumnal gentian, *Gentiana Amarella*, (*Eng. Bot. v. 4. t. 236*), which obtains a place in some of the foreign dispensatories, by the name of *Gentianella*, is said to possess sensible qualities and medicinal properties similar to those of the larger kinds. The purple gentian, *Gentiana purpurea*, (*Andr. Bot. Repos. t. 117*), or the *cursuta* of the former editions of the

Edinburgh pharmacopœia, which is a native of the Alps, and was introduced into this country by Saussure in 1768, is a powerful bitter, greatly resembling in appearance and taste the officinal gentian, but in no degree superior, though used by some practitioners of Edinburgh for nearly half a century. Another species of this genus, the Chirayit Gentian or Wormseed plant, the *Gentiana Chirayita*, of Roxburgh, has lately been brought into notice in England by Mr. Baker. It is an herbaceous plant, and is said by Dr. Fleming to be indigenous to the mountains to the westward of the Ganges, “having leaves, stem clasping lanceolate, 3-5 nerved; corolla rotate, four-cleft, smooth; stamens four; capsule ovate, bifurcate, as long as the calyx.” (Roxb. MSS.) It is said by Dr. Ainslie to be much used in decoction and infusion by the European practitioners of Bengal, and is found efficacious in combination with the *caranja* nut, (*Guilandina Bonducella*, Lin.) in curing intermittent fevers. “What appears in the bazars of Lower India, under the Tamol name *chayraet toochie*,) are small stalks of a light grey colour, and very bitter, but pleasant taste; the natives consider them as tonic, stomachic, and febrifuge, and prescribe a decoction or infusion of them, in the quantity of a small teacupful, twice daily.”

From enquiries which we made from a Hindoo, we ascertained that the infusion of the Chirayit Gentian, made very strong, is taken in large doses as a tonic, and often induces vomiting from its intense bitterness. It likewise occasionally acts with freedom on the bowels, producing copious bilious evacuations, on account of which it is highly esteemed in liver complaints. Given in the form of infusion, made with two drachms of the herb in a half pint of water; it seems simply to possess properties allied to our officinal plant.

MISTURA GENTIANÆ CUM MAGNESIA.

R Magnesiæ carbonatis ʒiiss.
 Infusi Gentianæ compositi ʒvj.
 — Caryophyllorum ʒij.

Fiat mistura, de quo sumat cochlearia tria majora bis die.—In dyspepsia, attended with acidity, this mixture generally proves very beneficial.

MISTURA GENTIANÆ SULPHURICA.

- R. Infusi Gentianæ compos. ℥v.
Tincturæ Gentianæ comp. ℥j.
Acidi sulphurici diluti ʒj.

Fiat mistura, cujus cochlearia tria majora ter die sumantur. This mode of administering gentian is recommended by Mr. Brande, where dyspepsia is attended with nausea and aversion to food.

INFUSUM GENTIANÆ CUM RHEO.

- Rj. Gentianæ Rad. concisæ. ʒj.
Rhei Rad. concisæ. ʒij.
Agnæ Ferventis. ℥xii.
Maceræ per horam, cola, et adde
Ammoniæ subcarbonatis. ʒij. Dosis, ℥ij.

In some forms of dyspepsia, chronic rheumatism, and irregular or chronic gout.

HAUSTUS GENTIANÆ CUM SENNA.

- Rj. Infusi gentianæ compositi ℥j.
Infusi sennæ comp. ℥ss.
Tincturæ sennæ ʒij.
Tincturæ zingiberis ʒß. Misce. Bis quotidie sumendus.

HAUSTUS GENTIANÆ AMMONIATUS.

- Rj. Infusi gentianæ comp. ℥j.
Sodæ carbonatis gr. x.
Rhei pulveris gr. iij.
Tinct. lavandulæ comp. ʒß. Misce. Fiat haustus bis die capiendus.

PILULÆ GENTIANÆ CUM AMMONIA.

- Rj. Extracti gentianæ.
Ammoniæ subcarbonatis aā. Misce. Fiant pilulæ xxiv. Sumantur duæ bis vel ter die.—In heartburn, in gouty habits.

- OFF. PREP. Extractum gentianæ, L. E. D.
Infusum gentianæ comp. L. D. D.
Tinctura gentianæ comp. L. E. D.
Vinum gentianæ compositum, E.



Rumex Hydrolapathum.

CXXXIII

RUMEX HYDROLAPATHUM.

Great Water Dock.

Class VI. HEXANDRIA.—Order III. TRIGYNIA.

GEN. CHAR. *Calyx* 3-leaved. *Petals* 3. *Seed* 1, naked triangular.

SPEC. CHAR. *Petals* ovate-oblong, nearly entire, unequally tuberculated. *Leaves* lanceolate, acute at each end. *Whorls* almost entirely leafless.

Syn.—*Lapathum maximum aquaticum*, sive *Hydrolapathum*, *Raii. Syn.* 140; *Bauh. Hist.* v. 2. 986. *f.* 987.

Hydrolapathum magnum. Ger. Em. 389. *f.* 1.

Lapathum n. 1588. *Hall. Hist.* v. 2. 271.

Rumex aquaticus. Lin. Sp. Pl. 479; *Fl. Brit.* 394; *Eng. Bot.* v. 30. t. 2104. *Hook. Scot.* 112.

Rumex Hydrolapathum. Willd. v. 2. 251; *Huds. Fl. Ang. ed.* 2. 151.

FOREIGN.—*Le Patience aquatique, Herbe Britanique, Fr.*; *Labaca maior ou larga, Port.*; *Wasserampfer, Ger.*; *Vaudskreppe, Dan.*; *Vatnsyra, Swed.*; *Wod-janoi schawel, Russ.*

THE genus *Rumex* consists of a pretty numerous assemblage of hardy, perennial, mostly herbaceous plants, nearly allied to *Rheum*. They have little or no pretensions to be considered as ornamental, and many of them are common weeds in cultivated grounds and pastures, especially in moist situations. The roots of most of the species are astringent, and in a few the leaves are powerfully acid. Willdenow, in the last edition of the “*Species Plantarum*,” enumerates thirty-six species, eleven of which are natives of Britain. Of these species it is necessary to mention only two as medicinal plants, viz. the great Water Dock, *Rumex Hydrolapathum*, and the Common Sorrel, *Rumex Acetosa*, both of which are indigenous, and have long obtained a place in our national pharmacopœias. The first grows in marshland ditches, stagnant waters, and the margins of great rivers, throughout Europe, as well as in North America, from Pennsylvania to Vir-

ginia, but, according to Mr. Pursh, not common. With us it is very abundant and conspicuous, being by far the largest of our docks; and flowering in July and August. We found it this summer (1829) in the greatest profusion at Whittlesea Mere, in Huntingdonshire, where the *Lycæna dispar*, or large Copper butterfly, (Curt. Brit. Entomol. v. 1. t. 12.) feeds on it in its caterpillar state.

The root is large, knotty, blackish-red externally, and furnished with numerous long hairy fibres. The stem rises about five feet in height, erect, branched, leafy, furrowed, cylindrical, and smooth. The leaves are somewhat glaucous, stalked, lanceolate, pointed, smooth, entire, but slightly curled at the edges, and tapering at the base. The radical leaves are often near two feet in length, and stand upon long channelled footstalks; those near the top of the stalk, small, narrow, and almost linear. The branches of the panicle are a little zigzag, beset with numerous many-flowered whorls. The flowers are drooping, on capillary pedicels of very unequal length, swelling at the top, and jointed towards the base. The calyx is divided into three narrow acute, permanent segments. The corolla consists of three petals, which are ovate, obtuse, reticulated with prominent veins, entire, sometimes a little wavy or notched, each bearing an oblong, reddish tubercle, varying in size and shape, and becoming most conspicuous when the seed ripens. The filaments are capillary, short, bearing erect, oblong, 2-lobed anthers. The germen is turbinate, and supports three capillary reflexed styles, with tufted stigmas. The capsule is formed of the enlarged petals, which by approximating assume a triangular form, inclosing a solitary ovate, acute triangular seed.—Fig. (a) front view of a flower a little magnified; (b) the calyx; (c) an anther; (d) the seed; (e) a flower with the petals, showing the germen and styles; (f) the germen and styles detached.

QUALITIES.—The roots externally are blackish-red; internally, white, with a reddish tinge, which in drying changes in some parts to a yellowish colour. They strike a black colour with sulphate of iron, and give out their active matter both to water and rectified spirit.

MEDICAL PROPERTIES.—Amongst the ancients there was a root employed as a celebrated antiscorbutic, termed by them *herba britannica*, which Muntingius in a prolix Latin work, written at the end of the seventeenth century, endeavours to prove to be the water-dock. He further states that its name *britannica* was not derived from its English growth, but from Teutonic words, expressive of its power of fastening loose teeth, or of constringing the gums. The roots are certainly strongly astringent, and may be successfully employed for the above-mentioned purposes; and for hæmorrhage from the bowels, especially when dependent on attacks of scurvy. The leaves, which are somewhat acid, have been occasionally employed to obviate habitual costiveness.

A decoction of one ounce of the sliced root of the Patience Dock, *Rumex Patientia*, in a pint of water, is said to be extremely efficacious in obstinate ichthyosis—a disease of the skin, resembling fishes-scales.* In a full dose, it operates as a cathartic, and at the same time improves the tone of the stomach. Hence it is sometimes called Monk's Rhubarb, though that is now retained rather for the *Rumex Alpinus*.

RUMEX ACETOSA.—Common Sorrel.

SPEC. CHAR. *Flowers* diœcious. *Leaves* oblong, arrow-shaped. *Petals* tuberculated.

Syn.—*Lapathum acetosum vulgare. Raii. Syn. 143.*

Oxalis. Fuchs. Hist. 464. f.

Oxalis sive Acetosa. Ger. Em. 396. f.; Matth. Valgr. v. 1. 405. f.

Lapathum. n. 1597. Hall. Hist. v. 2. 274.

Acetosa pratensis. Bauh. Pin. 114.

Rumex Acetosa. Lin. Sp. Pl. 481; Willd. v. 2. 260; Fl. Brit. 396; Eng.

Bot. v. 2. t. 127; Hook. Scot. 113; Woodv. t. 69.

FOREIGN.—*Oseille ordinaire, Fr.; Acetosa, It.; Acedra, Sp.; Sauer Ampfer, Ger.*

SORREL is an indigenous perennial plant, common in meadows and grassy pastures throughout Europe, from the alps of Lapland to Greece; flowering early in June.

* *London Dispensatory, 2d. ed. p. 486.*

The root is long, tapering and fibrous, sending up several stems from one to two feet high, erect, round, simple, striated and leafy. The lower leaves have long footstalks; they are oblong, arrow-shaped, blunt, and marked with two lateral teeth at the base; the upper leaves are sessile, more oblong and narrower. The stipulas are tubular, membranous, and jagged at the summit. The flowers are diœcious in branched panicles, and disposed in whorls, upon short pedicels. The barren flowers are green and tinged of a reddish colour. The petals are three, ovate, rather larger than the calyx, which latter is reflexed when in fruit. The fertile flowers are on a separate plant, and of a redder colour than the barren ones. The petals are ovate, obtuse, red, entire, each bearing a pale oblong tubercle. The filaments are very short, furnished with large yellow 2-lobed anthers; the germen is triangular, and supports three reflexed styles with large crimson bearded stigmas. The seeds are triangular.

QUALITIES.—The leaves are inodorous, but have a very grateful acid taste, owing to the presence of the superoxalate of potass, which may be extracted from them, and purified by crystallization. The same acidity occurs in the leaves of *Rheum compactum*, *Oxalis acetosella*, and several other plants.

MEDICAL PROPERTIES AND USES.—The expressed juice of Sorrel diluted with water is sometimes used as an agreeable refrigerant drink in inflammatory fevers, and occasionally the leaves are boiled in milk to form a pleasant whey. They have also been employed with advantage, when eaten raw, in large quantities daily as a salad, in scurvy, and some cutaneous diseases. For culinary purposes the French sorrel, (*Rumex scutatus*, L.) being more gratefully acid, is generally preferred to common sorrel; and a third species, the *R. arifolius* of the “*Flore Française*,” is reckoned by the Parisians still more delicate than either of the others.



Glycyrrhiza glabra.

CXXXIV

GLYCYRRHIZA GLABRA.

Common Liquorice.

Class. XVII. DIADELPHIA.—*Order* IV. DECANDRIA.

Nat. Ord. PAPILIONACEÆ, *Lin.* LEGUMINOSÆ, *Juss.*

GEN. CHAR. *Calyx* bilabiate; upper lip 3-cleft, lower undivided. *Legume* ovate, compressed.

SPEC. CHAR. *Legumes* smooth. *Flowers* spiked. *Leaflets* ovate, blunt, the terminal one on a longish stalk.

Syn.—*Glycyrrhiza vulgaris*. *Ger. Em.* 1302. *Raii. Hist.* 90. *Dod. Pempt.* 341.

Glycyrrhiza radice repente, *Bauh. Hist.* v. 2. p. 328.

Glycyrrhiza siliquosa, vel *germanica*. *Bauh. Pin.* p. 352. *Moris. Hist.* v. 2. p. 89.

Glycyrrhiza glabra. *Lin. Sp. Pl.* 1046; *Willd.* v. 3. 1143; *Woodv.* v. 2. t. 167. *Lamar. Illust.* 183. t. 625; *Ait. Kew. ed. 2d.* v. 4. p. 329.

FOREIGN.—*Réglisse*; *Racine douce*, Fr.; *Legorixia*; *liquirizia*, It.; *Regaliz*, Sp. and Port.; *Süsholz*; *Lackrizen*, Ger. *Lakris*, Dan.; *Lakrits*, Swed.; *Dubez solotkoi*, Rus.; *Jét'himand'h*, Hind.

THE common Liquorice is a native of the south of Europe; but has been cultivated in our gardens ever since the time of Turner in 1562. Stowe informs us that “the planting and growing of Licorish began about the first year of Queen Elizabeth.” It was formerly cultivated to a considerable extent at Pontefract, in Yorkshire; Worksop, in Nottinghamshire, and Godalming, in Surrey; but the greater part of what is now used in England, is grown at Mitcham, Battersea, Fulham, and other places near London. It flourishes most in a light sandy soil, producing its flowers in August.

The root is perennial, running very deep into the ground, and creeping to a considerable distance. When full grown it is as thick as the thumb, round, slender, flexible, and furnished with a few scattered fibres, of a brownish colour externally; yellowish, succulent, and fibrous within. From the root proceed three or four erect, herbaceous stems, of a pale green colour, and striated, with few branches, to the height of four feet and up-

wards. The leaves are alternate, pinnated, and composed of five or six pairs of leaflets, with a terminal one standing on a longish footstalk; the leaflets are ovate, blunt, veined, petiolated, nearly two inches long, and of a yellowish green colour, and clammy on the under-side. The flowers are small, bluish or purplish, and papilionaceous, standing on naked pedicels, in long axillary spikes. The calyx is persistent, tubular, cut obliquely into two lips, and divided into narrow pointed segments. The corolla consists of an ovate, lanceolate, obtuse, erect, concave *vexillum*; two oblong, obtuse *alæ*, and a similar shaped, but shorter *carina*. The filaments are ten, nine of which are united at the base, and all of them furnished with simple roundish anthers; the germen is short, with a tapering style and blunt stigma. The legumes are oblong, smooth, compressed, pointed, and 1-celled, containing two or three small kidney-shaped seeds. Fig. (a) a flower magnified; (b) the *vexillum*; (c) *alæ*; (d) *carina*; (e) the nine united stamens; (f) germen and style; (g) the legume; (h) a seed.

From Dr Fleming's Catalogue of Indian plants, it appears that liquorice grows in the Bengal provinces; and Dr. Ainslie asserts it to be a product of the Malabar coast, where it is called *irattimadhiram*. The greater part, however, of what is sold in Lower India, is imported from Persia, where it grows in great abundance in the date groves near Bussora, and on the banks of the Sewund river. The roots of the wild Jamaica liquorice (*Abrus precatorius*, Lin.) a beautiful climbing shrub, resemble so much the true liquorice root in appearance and qualities, that they are often sold in India, and used as such.

The liquorice plant is very faithfully and accurately described by Dioscorides, under the name *γλυκίρριζα*, though he says the flower is like a hyacinth, which probably alludes to the colour only, whether his *νακινθος* be the *Delphinium* or *Hyacinthus* of modern botanists. The word is compounded of *γλυκυσ*, sweet, and *ρίζα*, a root, and the name in apothecaries latin, *liquirita*, as well as the English one liquorice; the French *reglisse*, the Italian *legoriza*, and all their corruptions originate from it.

CULTURE.—The liquorice is propagated by cuttings of the small roots divided into sections, five or six inches long, each having one or more good buds. The proper season for procuring the sets for planting, is in open weather, about the middle of March. A light sandy soil is

the best adapted for this kind of crop, as its goodness consists in the length of the roots. The ground should be trenched three spades deep; then having traced out rows a yard asunder, plant the sets along each row, at intervals of eighteen inches, covering them entirely with mould. The London gardeners usually sow a crop of onions or lettuce on the same ground the first year, between the rows. During spring and summer, all weeds must be kept down by the hoe, care being taken not to cut off the top shoots of the liquorice plants, as it would greatly injure them. In the autumn, when the stems of the liquorice are in a decaying state, they should be cut down, and a very little rotten dung spread upon the surface. In the following spring about March, the ground should be slightly dug between the rows of liquorice, burying the remaining part of the dung, being very careful not to cut the roots. During the summer they must be kept quite clean by occasional hoeing. The same operations must be annually performed, so as to keep the ground and plants in perfect order. In three years after planting, the roots of the liquorice will be fit to take up. The proper season for this is from November till February; for they should neither be taken up before the stalks are fully decayed, nor deferred till late in spring, otherwise the roots will be apt to shrivel and diminish in weight. In taking them up, the small side roots are trimmed off, the best divided into lengths for fresh sets, and the main roots tied in bundles for sale. They are sold to the brewers and druggists; the price of the best roots varying from 40s. to £3. per cwt. The *Glycyrrhiza echinata*, or prickly-podded liquorice, is sometimes cultivated, but its roots are less sweet and succulent than the officinal species.

QUALITIES.—Liquorice root is inodorous; it has a sweet mucilaginous taste, and is almost the only saccharine substance that does not produce thirst. It yields all its virtues to water by coction; but alcohol extracts only the sweetness, with a small portion of mucilage. The medical properties of the root are supposed to depend on a distinct principle, to which has been appropriated the name *glycyrrhizine*. Prof. Döbreiner prepares it by precipitating the infusion of liquorice by the pro-muriate of copper, washing the precipitate with water, and then boiling it in alcohol, which dissolves the glycyrrhizine, and affords it again on evaporation. It is soluble in water, and precipitated from its solution by the acids. Its taste is sweet; it is brittle, semi-transparent, and has a resinous appearance.

The *extract* is directed to be prepared by macerating for twenty-four hours, one pound of liquorice-root sliced, in a gallon of boiling water; then boiling down to four pints, straining the hot liquor, and evaporating it to a proper consistence. A purer extract may be made by a repetition of the process of solution and evaporation; and is kept in the shops under the name of "refined liquorice." The extract is, however, usually prepared on a large scale abroad, and is imported into this country, in an impure state, particularly from Spain. The powder of liquorice usually sold, is often mixed with flour, and probably too often with substances not quite so wholesome; the best sort is of a brownish yellow colour, (the fine pale yellow being generally sophisticated), and of a very rich sweet taste, much more agreeable than that of the fresh root.

MEDICAL PROPERTIES AND USES.—Unlike other sweets, liquorice has had the reputation from time immemorial of allaying thirst, which property is attributed, by Cullen, to an acrid and bitter matter, which follows the extraction of the sweetness by chewing. In consequence of this virtue, it was designated by the name *αδύρον*, and according to Galen, alleviates the desire for drink in dropsical cases. With us it is principally used as a pleasant demulcent, and in the form of decoction; or, combined with other mucilaginous substances, is frequently prescribed for severe colds, and for those other affections of the air passages requiring lubrication. It is also useful to obtund the acrimony of vitiated secretions in the stomach and bowels; or, as a substitute for the natural mucus of the stomach, when deficient in quantity. From its bulk it is seldom given in substance, but a tea-cupful of a decoction of the root, may be frequently drank. Under the form of extract it is in common use as a demulcent, in coughs and hoarsenesses; and is sometimes taken to relieve acidity of the stomach. It is also employed to cover the unpleasant taste of several bitter and nauseous drugs, particularly aloes and Peruvian bark.

OFF. PREP.—Decoctum Sarsaparillæ. comp. *L. D.*

Infusum Lini. *L.*

Pil. Hydragryri. *L. D.*

Confectio Sennæ. *L. E.*



Marrubium vulgare.

MARRUBIUM VULGARE.

Common White Horehound.

Class XIV. DIDYNAMIA.—*Order I. GYMNOSPERMIA.*

Nat. Ord. VERTICILLATÆ, Lin. LABIATÆ, Juss.

GEN. CHAR. *Calyx* tubular, funnel-shaped, with 10 furrows. Upper lip of the *corolla* bifid, linear, and straight.

SPEC. CHAR. *Calyx-teeth* 10, bristle-shaped, hooked. *Leaves* roundish-ovate, wrinkled, unequally serrated.

Syn.—*Marrubium. Matth. Valgr. v. 2. 182. f.; Camer. Epit. 573. f.; Fuchs. Hist. 590. f.*

Marrubium album. Raii. Syn. 239; Riv. Monop. Irr. t. 66. f. 1.

Marrubium n. 258. Hall. Hist. v. 1. 113.

Marrubium vulgare. Lin. Sp. Pl. 816; Willd. v. 3. 111. Fl. Brit. 636; Eng. Bot. v. 6. t. 410; Hook. Scot. 184. Bull. Fr. t. 165. Woodv. t. 97.

FOREIGN.—*Marrube blanc, Fr.; Marrobio bianco, It.; Marrubio blanco, Sp.; Marroyo branco, Port.; Witte malrove, Ger.; Andorn, Swed.; Rubike, Hvidmaru, Dan.; Marrub ili schandra, Rus.*

WHITE HOREHOUND is common in most parts of Europe as well as in Britain, on waste grounds and among rubbish, particularly in warm, dry situations, flowering copiously during the latter part of the summer. Willdenow enumerates fourteen species of *Marrubium*, and Mr. Don in the "*Hortus Cantabrigiensis*" notices thirteen that are cultivated in this country, most of which are European plants. Dr. Sibthorp has also added a beautiful new species, in the "*Flora Græca*," called *velutinum*.

The root is perennial, woody, and fibrous, sending up several stems, branching from the bottom, about eighteen inches high, quadrangular, leafy, and clothed with fine down. The leaves are roundish or oblong, pointed, crenate, wrinkled, veined, hoary, and stand in opposite pairs, on thick broad footstalks. The flowers are white, and produced in dense convex whorls, at the axillæ of the leaves; they are sessile, and furnished with setaceous, awned bractæas. The calyx is tubular, funnel-shaped, furrowed, and divided at the margin into ten narrow teeth, recurved at the point, the five alternate ones being smallest. The corolla is monopetalous, and consists of a cylindrical tube opening at the mouth into two lips, the upper of which is erect,

linear, and cloven, the under broader, reflexed, and divided into three deep lobes, with the lateral segments acute, and the middle one broad and slightly scalloped at the end. The filaments are, two long and two short, concealed within the tube of the corolla, and furnished with small oblong anthers. The germen is 4-lobed, surmounted by a thread-shaped style, with a cloven stigma. The seeds are four, at the bottom of the calyx.—Fig. (a) is a magnified flower cut open to show the position of the anthers; (b) the germen and style; (c) a seed; (d) the calyx; (e) the same cut open; (f) a bractea.

QUALITIES.—The leaves have a strong peculiar smell of an aromatic kind, which is completely lost by keeping. To the taste they are bitter, penetrating, diffusive, and durable in the mouth. “The infusion reddens tincture of litmus, gives a deep olive-green precipitate with sulphate of iron, a brown with nitrate of silver, and a pale yellow with muriate of mercury: acetate and superacetate of lead do not affect it. The active principles of horehound therefore appear to be a bitter extractive, volatile oil, and gallic acid.”

MEDICAL PROPERTIES AND USES.—This plant, which is still a very popular remedy with the poor, is tonic, produces an increased flow of urine, and when taken in considerable doses is gently aperient. It was formerly much commended for asthma, jaundice, cachexy, and visceral and uterine obstructions. It has however given way to more active remedies, but although seldom employed by medical men, is said by Dr. Thompson to have been of decided use in cases of phthisis. A drachm of the leaves in powder, or an ounce of the expressed juice; are commonly ordered for a dose. The infusion is made with one ounce of the dried leaves, and a pint of boiling water, and given in the quantity of a wine-glassful twice or thrice a day.*

DECOCTUM MARRUBII COMPOSITUM.

Rj. Marrubii Fol. exsicc. ʒj.
 Glycyrrhizæ Rad. concisæ,
 Lini Usitatis. Sem. contus. sing. ʒss.
 Aquæ Ferventis Ojss. Macera per horas
 quatuor, et cola.—Dosis ʒj. ad ʒij.

* The nostrum sold as *Balsam of Horehound* consists, according to Paris, of infusion of horehound and liquorice root, with double the proportion of proof spirit or brandy; to which is added opium, camphor, benzoin, squills, oil of aniseed and honey. A remedy for consumption forsooth!!



Veratrum album

VERATRUM ALBUM.

White flowered Veratrum, or White Hellebore.

Class XXIII. POLYGAMIA. Order I. MONŒCIA.

Nat. Ord. CORONARIÆ, Lin. JUNCII, Juss.

GEN. CHAR. *Calyx* 0. *Corolla* 6-petalled. *Styles* permanent. *Capsules* 3, many seeded. *Seeds*, compressed, imbricated, winged at each end. Some flowers male.

SPEC. CHAR. *Panicle* thrice compounded. *Petals* ascending.

Syn.—*Helleborus albus flore subviridi. Bauh. Pin.* 186.

Helleborus albus vulgaris. Park. Theatr. 217.

Helleborus præcox. Ger. Em. 440.

Elleborum album, Matth. Valgr. v. 2, 559.

Veratrum flore subviridi. Tourn. Inst. 272.

Veratrum spica paniculata, floribus maribus et feminis, n. 1204. *Hall. Hist. v.* 2. *p.* 96.

Veratrum album. Lin. Sp. Pl. 1479; *Willd. v.* 4. 895; *Jacq. Austr. v.* 4. *t.* 335; *Mill. Ic. t.* 271; *Fl. Dan. t.* 1121. *Woodv. t.* 100.

FOREIGN.—*Hellébore blanc. à fleur pâle, Fr.; Elleboro bianco, It.; Vedegambre blanco, Sp. Helleboro branco, Port.; Die weisse Niezwurzel, Ger.; Witbloemige nieswortel, Dut.; Hvit prustrot, Swed.; Tschemeriza, Rus.*

WHITE HELLEBORE is a native of the mountainous districts in most parts of Europe, from Norway to Greece, but not of Great Britain. This stately plant, accompanied by the *Gentiana lutea*, makes a magnificent appearance in rich pastures on the alps of Switzerland, where they both grow in the greatest abundance. It is, of course, a hardy perennial, in our gardens, where it has been cultivated from time immemorial; flowering from June to August.

The root is tuberous, fleshy, brownish externally, and fur-

nished at the base, with long, simple, white, cylindrical fibres. The stem is from two to four or five feet high, stout, erect, simple, hairy, and terminated in a large branching downy panicle, with alternate spikelets, of innumerable greenish white flowers, having little or no scent. The leaves are large, elliptical and entire, surrounding the stem at the base, plaited longitudinally, smooth, of a fine green colour, the uppermost becoming oblong lanceolate bracteas. The corolla consists of six petals, of a pale green colour, which are oblong, lanceolate, veined, spreading, of a coriaceous texture, and accompanied by an elliptical-lanceolate, downy bractea. The filaments are six, closely surrounding the germen, shorter than the corolla, diverging, and terminated by quadrangular anthers; the germens are three in each hermaphrodite flower, oblong, with spreading styles, which are terminated with bifid stigmas. The capsules are three, oblong, compressed, 2-celled, bursting at the inner edge, and containing many oblong, compressed, imbricated seeds, winged at each end. Fig. (a) represents a front and back view of a stamen and anther; (b) the three germens and styles.

The Green Veratrum (*V. viride*) a North American species, greatly resembles in its foliage and habit the White Hellebore, but the panicle is larger and greener, its branches longer and more cylindrical, spiked, not racemose, each flower being nearly or quite sessile. The petals are also broader; their margins being thickened and mealy about the base. The Veratrum *nigrum*, or Black Hellebore, agrees with the Veratrum *album* in habit and leaves, but is somewhat taller, and is very remarkable for the very dark purplish-brown, almost black hue of its flowers, which exhale a faint cadaverous odour. It is a native of dry mountainous situations in Siberia, Hungary, Austria and Greece; flowering in July.

QUALITIES AND CHEMICAL PROPERTIES.—When recent, this root has a disagreeable odour: as met with in the shops scarcely any. To the taste it is acrid, nauseous, and bitter, excoriating the mouth and fauces; while the powder, if applied to wounds, produces effects on the animal economy of a highly deleterious nature; as may be seen by referring to its poisonous

effects. If applied to the membrane lining the nose, it proves a violent sternutatory.

On analysis, the root of the *Veratrum album* yielded to MM. Pelletier and Caventou, 1. A fatty matter composed of oil, adipocire, and an acid similar to the sebacic, but uncrystallizable; 2. Yellow extractive colouring matter; 3. Acid gallate of *veratrine*; 4. Gum; 5. Fecula; 6. Woody fibre; the ashes containing carbonates of potass and lime, sulphate of lime and silica.

It is on the *Veratrine* that its poisonous effects depend; and these successful chemists, amongst many other brilliant discoveries, have remarked that almost all the individuals of this family of plants, exert a common action over animals, owing to this principle pervading them. They first analysed the seeds of the *Veratrum sabadilla*; isolating the *veratrine*, in which they recognised all the alkaline characters. They ultimately discovered it in the root of *Colchicum autumnale*, and in that of our plant.

PREPARATION OF VERATRINE.—They repeatedly digested the seeds of the *Veratrum sabadilla* in boiling alcohol. These tinctures, filtrated whilst almost boiling, deposited, on cooling, whitish flakes of wax. They redigested the matter which remained dissolved, after evaporating it to the consistence of an extract, in cold water: a small quantity of fatty matter now remained on the filter. The solution was slowly evaporated, and it formed an orange yellow precipitate, which possessed the characteristics of the colouring matter found in almost all the woody vegetables. On adding a solution of acetate of lead to the liquor, which was still deeply coloured, a new and very abundant yellow precipitate was immediately formed, which was separated by means of the filter. The liquor, now nearly colourless, still contained, amongst other substances, the acetate of lead, which had been added in excess: a current of Hydrosulphuric acid was used to separate the lead. The liquor was then filtrated and concentrated by evaporation, treated by magnesia, and again filtrated. The magnesian precipitate was digested in boiling alcohol. The alcoholic liquors yielded on evaporation, a pulverulent substance, which was extremely acrid, and possessed all the properties of the alkalies. This substance was at first yellowish; but, by solutions in alcohol, and subsequent precipitations, caused by pouring water into the alcoholic solutions, it was obtained in the form of a very white and perfectly inodorous powder.

M. Meissner, who discovered the *veratrine* nearly at the same time as M. M. Pelletier and Caventou, recommends the seeds of the *cevadilla* to be treated with undilute alcohol, the alcoholic infusion evaporated, the residuum treated with water, the liquor filtered, and the

veratrine to be precipitated by the carbonate of potass: it then only remains to wash the preeipitate with water.

CHEMICAL PROPERTIES OF VERATRINE.—Veratrine is seareely at all soluble in eold water; boiling water, however, dissolves $\frac{1}{1000}$ of its weight, and becoomes sensibly acrid.

It is very soluble in ether, and still more so in alcohol. It is insoluble in the alkalies, and soluble in all the vegetable acids. It saturates all the acids, and forms with them incrySTALLIZABLE salts, whieh, on evaporation, take the appearance of gum. The sulphate alone affords rudiments of crystals when its acid is in excess.

Nitric acid combines with veratrine; but if added in excess, especially when concentrated, it does not produee superoxidation, as in the cases of morphine and strychnine; but very rapidly resolves the vegetable substance into its elements, and gives birth to a yellow detonating matter analogous to the *bitter of Welther*.

Veratrine restores the blue of turnsol paper when reddened by acids. Exposed to the action of heat, it liquefies at a temperature of 50° (122° Fah.) above zero, and has then the appearance of wax: on cooling, it forms an amber-looking mass of a translucent appearance. Distilled on the naked fire, it swells up, becomes decomposed, and produces water, much oil, &c. A voluminous, carbonaceous, mass remains, which, when ineinerated, leaves only a very slightly alkaline residuum.

POISONOUS EFFECTS.—Taken internally, in over-doses, white hellebore excites violent vomiting and purging, followed by copious discharges of blood from the bowels. It also produces violent effects on the nervous system, attended by great prostration of strength, anxiety, tremors, loss of voice, vertigo, syncope, deep inspirations, sinking and intermission of the pulse, convulsions, and cold sweats ushering in death.

Wepfer affirms that he administered to a puppy of three weeks old a scruple of white hellebore mixed with milk: the animal instantly vomited it, had some alvine evacuations, and a few convulsive movements; an hour afterwards it appeared to be dead. In half an hour it was opened: the heart and diaphragm were contracting; the interior of the stomach was somewhat red.*

Amongst many other experiments of Orfila, he made an incision in the internal part of a dog's thigh, and sprinkled the wound with 20 grains of white hellebore root finely powdered; the lips of the wound were brought together by several stitches, and the animal was muzzled, in order to prevent him applying his tongue to the part operated on. Six minutes after, he vomited; he lay down upon the belly, and made some moaning; at three-quarters past eight he had already made more than twenty times violent efforts to vomit, and had thrown up

* *Cicutæ Aquaticæ Historia*, p. 219.

some bilious mucosities: he suffered such a degree of vertigo as rendered him incapable of advancing two steps without falling: he still retained the use of his senses, and uttered no moan: his eyelids were frequently agitated by a kind of convulsive movement. At nine o'clock he could no longer stand: the pulsations of the heart, which were strong, hurried, and irregular, did not appear to correspond with the state of stupefaction in which the animal was plunged; he often performed the motions of deglutition. At half past nine, the eyelids and the pulsations of the heart were in the same condition; the inspirations were very deep; there was no convulsive movement, and the animal was so far sunk, that he might have been taken for dead. At ten o'clock the pupils began to be dilated. At one no change had taken place; he was shaken; he made a slight movement, and fell again instantly: the pupils were extremely dilated, and the snapping of the eyelids went on increasing. He expired at three in the afternoon. An hour after, he was opened: there was only a slight oscillation of the heart; the blood contained in both ventricles was fluid: the lungs, which were distended with blood, and somewhat less crepitating than in their natural state, were spotted over with some black patches: the interior of the rectum presented several black spots: the mucous membrane of the stomach was a little inflamed as well as the wound. Similar results were obtained with two other animals, except that in one case, the digestive canal had sustained no injury.

At six in the morning, a robust dog was made to take the fluid obtained by treating an ounce of white hellebore by boiling water. This fluid had been filtered and concentrated. The œsophagus was then tied: in five minutes the animal made efforts to vomit. At seven o'clock he began to experience a weakness in his posterior extremities: he vacillated in walking. These symptoms went on increasing, and the animal died at eleven o'clock. He was opened the next day. The stomach contained a tolerably large quantity of thick mucus: it was very little inflamed. The mucous membrane of the rectum was of a red colour tolerably bright: the lungs exhibited livid spots; they were dense, and but little crepitating.*

Etmuller, in the preface to his work on Surgery, states that this root, when applied to the abdomen, produces violent vomiting; and Schreder observed the same phenomenon to take place, when this root was used as a suppository. Van Helmont also says, that a royal prince died in three hours after taking a scruple of this poison, which induced convulsions.

Similar effects, but in a much more violent degree, follow the use of *veratrine*, as the following account from Majendie's Formulary proves.

* It has been remarked that inflammation of the rectum is a constant occurrence when the animals who have taken black hellebore root survived its administration for a few hours. The same effect is also produced when *Colchicum autumnale* produces death.

ACTION OF VERATRINE ON ANIMALS.—A very small quantity of acetate of veratrine thrown into the nostrils of a dog, instantly provokes violent sneezing, which sometimes continues for nearly half an hour.

One or two grains (gr. 0.82 or 16.4 troy) placed in the gullet, immediately occasions copious salivation, which continues for some time.

If a small quantity be thrown into any part of the intestinal canal, and the body be opened to observe the effects, the intestine is found to become much indurated, and to relax and contract alternately for a certain time. The part of the mucous membrane which comes in contact with the veratrine is inflamed; the irritation spreads, and vomiting and purging are produced. In a much larger dose the substance induces a very great acceleration of the circulation and of respiration, which is soon followed by tetanus and death.

The effects are still more rapid if one or two grains (gr. 0.82 or 1.54 troy) be thrown into the pleura, or into the tunica vaginalis. In less than ten minutes death occurs, preceded by tetanic convulsions.

The same quantity thrown into the jugular vein also induces tetanus and death, in a few seconds. Dissection shews, even in this case, that the veratrine has produced an effect on the intestinal canal; for the mucous membrane is found to be highly injected. The lungs also present signs of inflammation and of engorgement.

ACTION OF VERATRINE ON MAN IN A STATE OF HEALTH AND DISEASE.—The effects of veratrine in a large dose have not been observed on man: they would, however, doubtless be the same as those which are noticed in animals.

The taste of veratrine is very acrid, but without bitterness. It excites a very copious salivation, however small the quantity may be which is put into the mouth.

Though veratrine is absolutely inodorous, it is inconvenient to smell at it too closely when in a state of powder; for even the small quantity which is thus carried into the nostrils is often sufficient to produce violent sneezing, which may become dangerous.

A dose of a quarter of a grain (gr. 0.205 troy) rapidly induces very abundant alvine evacuations. If the dose be augmented, more or less violent vomiting is occasioned.

M. Orfila lately gave it in the dose of two grains (gr. 1.64 troy) in the 24 hours, without producing too many alvine evacuations. The subject of the case was an old man, who had been struck with apoplexy some time previously. This circumstance forms an additional proof of the influence which the nervous system possesses over the mode of action of medicines.

After having cautiously tasted the mixture which contained the two grains (gr. 1.64 troy) of veratrine, I experienced, for several hours, an almost insupportably acrid sensation in the mouth and pharynx, the impression of which had not entirely disappeared on the following day. The patient felt no such inconvenience.

CASES PROPER FOR THE EXHIBITION OF VERATRINE.—As veratrine produces the same effects as the plants from which it is extracted, it may be substituted very advantageously for them; because it

permits the quantity of the active substance used to be estimated, which the others do not.

Veratrine is particularly applicable in cases where it is necessary to excite quickly a strong action of the bowels. When given with this intention, it has answered very well in the case of old people, where an enormous accumulation of fæces existed in the large intestines.

TREATMENT.—See *Helleborus niger*, Art. XI.

MEDICAL PROPERTIES AND USES.—Like most other violent remedies from the vegetable kingdom, white hellebore was often employed by the ancients in formidable and obstinate diseases, as mania, melancholia, dropsies, epilepsy, canine madness, elephantiasis, chronic eruptions, &c. They considered it safer when it excited vomiting; Hippocrates wishing this to be its first effect: and experiments on animals prove that they were perfectly correct; as may be seen by referring to Ex. No. 1 and 2 in Orfila's Toxicology. Women and children, the aged and debilitated, and those affected with diseases of the chest, were considered as unfit objects for its administration; and as it is asserted to be capable of affording relief, when no sensible evacuation was produced, its violence was generally moderated by other combinations. In later days, Mayerne asserts that he administered from two to three grains of the extract of the root with considerable advantage in maniacal cases, where no remarkable evacuations took place; and the encomiums of Gesner, who gave it not as an evacuant, but an alterative, led to its extensive use, and induced several authors to publish the results of their investigations. But the fullest trial was made by Greding, who employed it in twenty-eight cases of mania and melancholia, some of which derived no benefit, while others were relieved, and five recovered. In almost all these cases it acted more or less on the excretions; critical evacuations were often evident, many sweated profusely, and there was an increased secretion of urine, saliva, and the mucous discharges. Uterine obstructions of long standing were also often subjugated.

At one time, and that very lately, it was believed by many that the *V. album* was the active ingredient of that celebrated medicine for gout, the *Eau Medicinale*. Although this opinion appears fallacious, it led to its employment in that disease conjoined with opium, and we recollect many years ago to have seen it adminis-

tered with considerable success; which will not appear so very remarkable to those who are aware that its active principle veratrine, is, as already observed, a constituent of the meadow saffron. White hellebore, as an internal medicine is again fallen into disuse. It is however still employed externally as a local stimulant; as an errhine; or in the form of decoction, or mixed in powder with lard, as an ointment in scabies, and herpetic eruptions.* As an errhine it should be very cautiously employed; and it often renders the compound sulphur ointment exceedingly irritating to delicate skins.

For internal administration the dose must not exceed two grains; and when used as a snuff, one pinch may be used every night, composed of four grains to about half a drachm of starch.

OFF. PREP.—Decoctum Veratri. *L.*

Tinctura Veratri albi. *E.*

Unguentum Veratri. *L.*

Unguentum Sulphuris comp. *L.*

* BARCLAY'S ITCH OINTMENT. The predominant ingredient in this composition, is the powder of white hellebore, slightly perfumed with essence of lemons; and it is inferior in efficacy to the Ung. Hellebori albi of the Pharmacopœias.



Anethum graveolens.

G. Kraus Del.

Weddell Sc.

London Published for the Authors Nov 1829.

ANETHUM GRAVEOLENS.

Common, or Garden Dill.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Nat. Ord. UMBELLATÆ.

GEN. CHAR. *Fruit* elliptic-oblong, compressed, with equidistant ribs. *Petals* obovate, involuted, entire.

SPEC. CHAR. *Leaves* bipinnate; leaflets awl-shaped, *Seeds* compressed.

Syn.—Anethum. *Ger. Em.* 1033; *Raii Hist.* 415; *Camer. Epit.* 517. *f.*; *Matth. Valgr.* v. 2. 115. *f.*; *Fuchs. Hist.* 30. *f.*

Anethum hortense. *Park.* 886; *Bauh. Pin.* 147.

Anethum graveolens. *Lin. Sp. Pl.* 377; *Willd.* v. 1. 1469; *Gærtn. Fruct.* 1. 91; *Ait. Hort. Kew.* v. 2. 158; *Blackw. t.* 545; *Lob. Advers.* 347. *Woodv. t.* 159.

FOREIGN.—*Fenouil puant, ou persil odorant*, Fr.; *Appio pallustre*; *Sellero*, It.; *Eneldo de olor pesado*, Sp.; *Dill*, Ger.; *Sadacoopoy*, Tam.; *Sowa*, Hind.

DILL is a hardy biennial plant, a native of the corn fields of Spain and Portugal, and appears to have been introduced into England about the year 1570. According to Dr. Ainslie, it is also cultivated in Hindostan, where the seeds, called by the Brahmins *mishi*, are frequently sold in the bazaars of Lower India for caraway seeds. It is sometimes cultivated in our gardens as a medicinal plant, flowering in June and July.

The root is long, tapering, and whitish, striking deep into the ground, and sending up several erect, round, leafy, branching, jointed stems, rising to the height of two or three feet. The whole plant, with the exception of the flowers, is smooth, and of a deep glaucous-green colour. The leaves, as in all the plants

of this natural order, are placed alternately. They are large and doubly pinnated, upon broad, sheathing footstalks, with the leaflets linear and pointed. The flowers are produced in broad, flat, terminal umbels, of numerous general and partial rays, without either general or partial involucre. There is no calyx. The corolla consists of five equal, obovate, concave, yellow petals, with a broad, obtuse, involuted point. The filaments are five, yellow, spreading, incurved, and longer than the corolla, and bearing roundish, yellow anthers. The germen is inferior, or placed below the insertion of the petals, ovate, covered by the nectary, and surmounted by two short recurved styles, with simple stigmas. The seeds are oval, flat or much compressed, with three dorsal, equidistant prominent ribs, of a brown colour, and surrounded with a dull, pale yellow membranous expansion.—Fig. (*a*) represents an unexpanded flower, somewhat magnified, with the apexes of the petals inflected; (*b*) the same fully expanded; (*c*) a stamen and anther; (*d*) the germen and styles; (*e*) a seed; (*f*) the same cut transversely.

CULTURE.—It is raised from seed, of which, says Mr. Loudon, half an ounce is sufficient for a bed three feet by four feet. “Sow annually in February, March, or April, or occasionally in autumn, as soon as the seed is ripe to come up stronger in the spring, in any open compartment, either in drills six or seven inches apart, or broadcast thinly, and raked in evenly. The plants should remain when raised, and may be thinned moderately, should they rise too thick. They will shoot up in stalks, with leaves and seed umbels in summer and autumn, for use in proper season.”

QUALITIES.—The whole plant, particularly the seeds, which are the parts directed for use in the British pharmacopœias, have a powerful, aromatic odour, and a moderately warm pungent taste. These qualities depend on an essential oil, which is extracted by distillation with water. The seeds yield their active matter completely to alcohol, and partially to boiling water, by infusion.

MEDICAL PROPERTIES AND USES.—Like the anise and caraway, the seeds of Dill are carminative and stomachic; hence

they are used chiefly in dyspepsia, and in the flatulence to which infants are subject. They were formerly supposed to promote the secretion of milk, but this opinion is long since exploded. In India, where the plant is not uncommon, Dill seeds are given in infusion, as a stomachic, and also as a grateful cordial drink to women immediately after parturition.

DOSE.—In powder from gr. xv. to ʒj; of the essential oil, gtt. j. to gtt. iij.

OFF. PREP.—Aqua Anethi. L.

ANETHUM FŒNICULUM.—*Common Fennel.*

SPEC. CHAR. *Leaves* tripinnate; leaflets awl-shaped, drooping. *Fruit* ovate.

Syn.—Fœniculum vulgare. *Raii Syn.* 217; *Ger. Em.* 1032. f.; *Gærtn. v.* 1. 105. Fœniculum. *Camer. Epit.* 534; *Matth. Valgr. v.* 2. 135. f.; n. 760; *Hall. Hist. v.* 1. 333.

Fœniculum dulce. *Bauh. Pin.* 147.

Meum Fœniculum. *Sm. Eng. Flor. v.* 2. p. 85; *Spreng. Prodr.* 32.

Anethum Fœniculum. *Lin. Sp. Pl.* 377; *Willd. v.* 1. 1469; *Fl. Br.* 329; *Eng. Bot. v.* 17. t. 1208; *Woodv. t.* 160.

FOREIGN.—*Fenouil, ou Anis douce*, Fr.; *Finocchio*, It.; *Eneldo hinojo*, Sp.; *Fenchelsamen*, Ger.; *Mayuri*, Hind.

FENNEL is a biennial plant, which, though originally a native of the south of Europe, is now so completely naturalized in many parts of England, on chalky soils, that it has been admitted into the British Flora by Hudson, Withering, Smith, and other botanists. We found it plentifully in the chalk-pits about Greenhithe, and also in the great pit at Charlton, in Kent.

The root is spindle-shaped, cylindrical, and whitish. The herb is smooth, and of a deep glaucous-green colour. The stems are about four or five feet in height, numerous, erect,

much-branched, solid, round, striated, jointed, and shining. The leaves are alternate, on footstalks with a broad, sheathing base; tripinnate, composed of long, capillary, acute, drooping leaflets, of a dark green colour. The flowers, like those of Dill, are in broad, many-rayed, flat, terminal umbels. The petals, five, obovate, with their points turned inward, and of a golden yellow colour; the filaments shorter than the petals, spreading, incurved, yellow, and furnished with roundish anthers. The germen is inferior, ovate; the styles are very short, and the seeds are small, oblong, very little compressed, 3-ribbed, and of a brownish-olive colour, when ripe. Three varieties are cultivated; the dark green leaved, the sweet fennel, and finocchio, or Azorian fennel. The seeds are generally imported from Italy, and are reckoned superior to those of our own growth.

QUALITIES.—The whole plant has a strong aromatic odour, and a warm, sweetish, pungent taste. The seeds afford, by distillation with water, a considerable quantity of essential oil, on which their taste and flavour depend.

MEDICAL PROPERTIES AND USES.—The seeds of *sweet fennel* are carminative and stomachic; but they are scarcely ever employed in the present practice. The roots of common fennel have a sweetish taste, are slightly aromatic, and were formerly ranked among the aperient roots; the tender stalks are used in salads, and the leaves enter into many fish sauces. The blanched stalks of finocchio are eaten as a salad, and they are likewise sometimes put into soups.

DOSE.—The dose of the bruised seed may be from ℥j to ʒj.

OFF. PREP. Aqua Fœniculi, L. D.

Oleum Seminum Fœniculi dulcis, D.



Cucumis Colocynthis.

CUCUMIS COLOCYNTHIS.

Bitter Cucumber.

Class XXI. MONOECIA.—Order IX. SYNGENESIA.

Nat. Ord. CUCURBITACEÆ.

GEN. CHAR. Male. *Calyx* 5-toothed. *Corolla* 5-parted. *Filaments* 3.

Female. *Calyx* 5-toothed. *Corolla* 5-parted. *Pistil* 3-cleft. Seeds of the *gourd* with a sharp edge.

SPEC. CHAR. *Leaves* multifid. *Fruit* globose, smooth.

Syn.—Colocynthis. *Ger. Em.* 915; *Raii Hist.* 642; *Bauh. Hist.* 2. 232; *Moris. Hist. t. 6. f. 1.*

Colocynthis fructu rotundo major. *Bauh. Pin.* 313.

Colocynthis vulgaris. *Park. Theatr.* 160.

Colocynthis amara cathartica. *Lob. Ic.* 645.

Cucurbita Indica. *Camer. Epit.* 293. *f.*

Cucumis Colocynthis. *Lin. Sp. Pl.* 1092; *Willd. v. 4.* 611; *Ait. Hort. Kew. v. v. p.* 334; *Blackw. t.* 441; *Woodv. v. 3. t.* 175.

FOREIGN.—Coloquinte, Fr.; Coloquintida, It.; Pepinero Coloquintida, Sp.; Koloquinthen, Ger.; Indrdini, Hind.; Hunzil, Arab.; Indravdruni, Sans.

THIS plant, which belongs to the same genus with the rich melon for the dessert, and the cucumber well known for its cooling qualities, is a native of the Cape of Good Hope, Nubia, and Turkey; flowering from May till August. It appears to have been cultivated in this country in the days of Turner; and our figure was drawn from a specimen of the plant raised from the seeds in a hot-bed, at the Botanic Garden, Chelsea.

It is a trailing plant, bearing a considerable resemblance in its herbage to the cucumber. The root is annual, whitish,

branching, and strikes deep into the ground. The stems are slender, angular, branched, and rough, with short hairs. The leaves are on long petioles, of a triangular form, deeply and obtusely sinuated, of a bright green on the upper surface, paler and clothed with short hairs underneath. The flowers are solitary, axillary, and of a yellow colour. The calyx of the *male* flower is bell-shaped; the corolla monopetalous, bell-shaped, and divided at the margin, like the calyx, into five pointed segments; the filaments are three, two of which are bifid at the apex; they are all very short and inserted into the calyx; the anthers are linear, erect, and adhere together on the outer side. The *female* flower is like the male, but the filaments have no anthers; the germen is inferior, large, with a very short cylindrical style, and furnished with three stigmas, which are thick, gibbous, and bent outwardly. The fruit is a round berry or pepo, the size and colour of an orange, and smooth on the outside when ripe; trilocular, each cell containing numerous ovate, acute, compressed seeds, enveloped by a white spongy pulp.—Fig. (a) a male flower cut open; (b) front and back view of an anther; (c) a seed.

This plant is found abundantly in Turkey, and is supposed by many to be the plant described in the subjoined passage of holy writ “And one went out into the field to gather herbs, and found a wild vine, and gathered thereof wild gourds his lap full, and came and shred them into the pot of pottage: for he knew them not. So they poured out for the men to eat. And it came to pass, as they were eating pottage, that they cried out, and said, O thou man of God, there is death in the pot. And they could not eat thereof.” *

Burckhardt when travelling through Nubia found the ground covered with the plant, and states that it is very common in every part of the desert; and if we recollect right, it is mentioned more than once as being met with by Major Denham in his adventurous travels in Africa.

QUALITIES AND CHEMICAL PROPERTIES.—The medul-

* 2. Kings, 39, 40.

lary substance of the fruit of colocynth is the part used in medicine. It is white, soft, and porous. The seeds which are imbedded in it are nearly inert. To the taste it is intensely bitter. Boiled in water it gives out a large portion of mucilage, so as to form a liquor of a gelatinous consistence. This is less active than colocynth itself. Alcohol also dissolves only part of its active matter. Experiments seems to prove that colocynth pulp consists chiefly of mucus, resin, the bitter principle, and some gallic acid. According to M. Vauquelin, an alcoholic tincture of colocynth, yields by evaporation, a brittle substance, of a yellow colour, partially soluble in water, the residue consisting of a white filamentous mass, changing to yellow. He terms it *Colocyntine*, and considers the active principle of the pulp to reside in it.

POISONOUS EFFECTS.—Given in over doses, colocynth acts as a drastic irritating purgative. Dioscorides (lib. iv. c. clxxviii.) observes, that introduced into the rectum it produced a bloody flux; and Dr. Fordyce narrates a case of a woman who was subject to colic for thirty years in consequence of taking a strong infusion in beer. Orfila says, a man swallowed three ounces of colocynth, with the hopes of curing a gonorrhœa with which he had been attacked for several days. A short time afterwards he felt severe pains in the epigastrium, and vomited copiously. At the expiration of two hours, he had copious alvine evacuations; the lower extremities became bent, his sight was obscured, and he could only hear with great difficulty: a slight delirium came on, which was succeeded by vertigo. He was made to drink a great quantity of milk, which produced vomiting: ten leeches were applied to the abdomen, and the symptoms yielded by degrees.

TREATMENT.—Sec Art. XI. *HELLEBORUS Niger*.

MEDICAL PROPERTIES AND USES.—Both Hippocrates and Dioscorides were in the habit of employing this remedy as a drastic purgative in dropsy, lethargy, and maniacal cases; but were well acquainted with the violence of its effects if injudiciously administered. Its doses and combinations are now well

ascertained, and although it is scarcely ever prescribed in its simple state, no cathartic is more highly prized nor oftener used than the compound extract of colocynth, which combined with calomel, is the common aperient pill of the shops.

OFF. PREP.—Extract. colocynthidis. L.

Extract. colocynth. comp. L. D.

Pil. aloes cum colocynth. E. D.





Salix Russelliiana.

SALIX RUSSELLIANA.

Bedford Willow.

Class XXII. DICECIA.—Order II. DIANDRIA.

Nat. Ord. AMENTACEÆ, Lin. 50. Juss. 99.

GEN. CHAR. Male. *Catkin* cylindrical, imbricated. *Calyx* a scale. *Corolla* none. *Nectary* 1 or more glands at the base. *Stamens* 1—5.

Female. *Catkin* cylindrical, imbricated. *Calyx* a scale. *Corolla* none. *Style* bifid. *Capsule* 1-celled, 2-valved. *Seeds* downy.

SPEC. CHAR. *Leaves* lanceolate, acuminate, serrated, smooth. *Footstalks* glandular, or leafy. *Germen* tapering, stalked, longer than the scales. *Style* as long as the stigmas.

Syn.—*Salix fragilis*. *Woodv.* v. 2. t. 198.?

Salix Russelliana. *Willd. Sp. Pl.* v. 4. 656; *Fl. Brit.* 1045; *Eng. Bot.* v. 25. t. 1808; *Hook. Scot.* 279; *Purt. Mid. Fl.* v. 3. 77.

THIS species of Willow is a native of wet meadows, osier-holts, and hedges, throughout the midland and southern counties of England; flowering in April or May. It was long confounded with the *S. fragilis*, and was first made known for its valuable economical properties under the name of the Leicestershire, or Dishley Willow. The late Duke of Bedford brought it much into notice for its tall, handsome, rapid growth; and the bark was also found by Mr. Biggin, an able practical chemist, to contain more of the tannin principle than any other tree, except the oak. “Hence,” says Sir James Smith, “this bark, taken for *S. fragilis* has been found useful as a substitute for *Cinchona*, in agues; and if it has occasionally disappointed some medical practitioners, they probably chanced, in such cases to give the real *fragilis*. Tanners have sometimes been, in like manner, deceived, and they will find it worth their while to observe the character of the tree, in future, before they purchase its bark. On the other hand, when the tree in question was first recom-

mended for cultivation, by the name of the Leicestershire, or Dishley Willow, it was regarded with scorn, as "only the Crack Willow," a sort notoriously useless. This ignorance and prejudice are now removed, and *S. Russelliana* is found the most profitable for cultivation of any species of the genus, (of which sixty-four are indigenous to Britain,) for the value of its timber as well as bark, the rapidity of its growth, and the handsome aspect of the tree. A famous willow, planted by Dr. Johnson, at Lichfield, is the *Russelliana*; as I am assured by the Rev. Mr. Dickenson, who has mentioned it in his edition of Shaw's History of Staffordshire, p. 113, by the name of *fragilis*. We are obliged for the living specimens of the female plant, from which our figure was drawn, to Edward Forster, Esq. F.R.S. of Mansionhouse Street, and Hale End, Essex, Treasurer and Vice-President of the Linnean Society. We have not been able to procure the male catkins, nor have they been seen by Sir J. E. Smith.

The Bedford Willow is a tall tree, more handsome than the *Salix fragilis*. The branches are long, straight, and slender, very tough, round, flexible, and covered with a very polished bark. The leaves are lanceolate, very smooth, tapering at the base, not rounded, says the learned author of the "English Flora," nor do they at any period approach to the broad, ovate form of the crack willow, with a stouter midrib, and are strongly, and rather coarsely, serrated throughout. The footstalks are smooth, channelled, glandular, either along their edges, or about their summit, where they occasionally bear two or more lanceolate leaflets. The stipulas are half-ovate, toothed, or cut, and sometimes are altogether wanting. The female catkins are longer and more tapering than *fragilis*, and their common receptacle less downy. The calyx is oblong, either hairy or having a deciduous scale. The germen is lanceolate, tapering, smooth, on a smooth stalk; at whose base, on the inside, is a large, abrupt, solitary nectary. The style is equal in length to the deeply divided stigmas. The germen protrudes beyond the scale, nearly half its own length.

DISTINCTIVE CHARACTERS.—The whole hue of *Salix Russelliana* is lighter and brighter than that of *fragilis*, especially the leaves

which are more firm, narrower, tapering at the base; their serratures more coarse and irregular, and the midrib considerably stouter. The glands on the footstalk sometimes become leaflets. The germen is longer and more tapering, with a longer stalk and style. In *fragilis*, the germen is ovate, and scarcely, if at all, longer than the scale. *Salix Errhartiana*, or the Hexandrous German Willow, bears a considerable affinity to the present species, but its leaves are much smaller, more elliptic-lanceolate, with finer, closer serratures, and the scales of the catkins shorter and rounder. This valuable species may be distinguished even in winter, from the *fragilis*, when stripped of its leaves, “by its much more handsome and straight mode of growth, instead of the branched decussating each other, or being set on obliquely, in the very unsightly manner of that tree.”

QUALITIES AND CHEMICAL PROPERTIES.—The bark of this species of willow agrees in its sensible properties with the others, excepting that it has been found to contain a much larger proportion of tannin. It is on this account that it has been strongly recommended by Sir J. Smith, as preferable for medicinal purposes; to which opinion we cordially subscribe. Neither this, nor the bark yielded by the *S. fragilis* and *S. caprea*, have undergone, as far as we know, any elaborate chemical analysis, but under the next subject will be found a minute detail of Bouillon La Grange’s experiment on the *S. alba*.

MEDICAL PROPERTIES AND USES.—Although the bark of the *Salix Russelliana*, is, on the authority of Sir J. E. Smith, best adapted for medicinal purposes, it was that of the *S. alba* which was first used by the Rev. E. Stone, of Chipping-Norton, whose paper in Vol. LIII. of the Philosophical Transactions introduced it to notice; and from which we make the following extract:—“I have continued to use it in two scruple doses, repeated every four hours between the fits, as a remedy for agues and intermitting disorders, for five years successively and successfully. It hath been given, I believe, to fifty persons, and never failed in the cure, except in a few autumnal and quartan agues with which the patients had been long and severely afflicted: these it reduced in a great degree, but did not completely take them off; the patient, at the usual time for the return of his fit, felt some smattering of his distemper, which the incessant repetition of these powders could not conquer: it seemed as if their power could reach thus far and no farther, and I did suppose that it would not have long continued to reach so far, and that the distemper would have soon returned with its pristine violence; but I did not stay to see the issue. I added one fifth part of Peruvian bark to it, and with this small auxiliary it totally routed its adversary.”

SALIX FRAGILIS.—*Crack Willow*.

SPEC. CHAR. *Leaves* ovate-lanceolate, pointed, serrated, very smooth. *Germen* ovate, nearly sessile, smooth. *Scales* oblong, about equal to the stamens and pistils. *Stigma* cloven, longer than the style.

Syn.—*Salix fragilis*. *Lin. Sp. Pl.* 1443; *Willd. v. 4.* 669; *Fl. Brit.* 1051; *Eng. Bot. v. 26. t.* 1807; *Hook. Scot.* 279.

THE Crack Willow is a native of Sweden, Germany, and England. With us it is not unfrequent in low marshy grounds, about the banks of rivers, flowering in May. Several trees of this species are to be seen at Millbank in Westminster; and in Battersea Fields. It is a large bushy tree, known by the crooked position of its branches, which are set on obliquely, somewhat crossing each other, and not continued in a straight line, as in *S. Russelliana*. They are round, very smooth, with a brown polished bark, and so brittle at the base in spring, that with the slightest blow they start from the trunk; but the same thing is observed in the *S. decipiens*, and several other willows. The leaves are four or five inches long, ovate-lanceolate, very smooth except when young, pointed, with blunt, often unequal, but not coarse serratures; of a dark colour on the upper surface, paler underneath, broadest toward the base, and when full grown become rounded at that part. The footstalks are smooth; seldom producing small accessory leaflets. The stipulas are half-heart shaped, and strongly serrated. The *male* catkin is pale, cylindrical, with rounded concave, downy scales, and from 2 to 5 stamens to each floret. The *female* catkin resembles the male, having the germen nearly sessile, smooth, ovate, obtuse, rather compressed, with a rounded nectary at its base, on the contrary side to the scale. The style is very short, with deeply divided spreading stigmas.

QUALITIES AND USES.—Whatever economical or medical uses have been attributed to this willow belong to the preceding, which has very generally been mistaken for it.

SALIX ALBA.—*Common White Willow.*

SPEC. CHAR. *Leaves* elliptic-lanceolate, pointed, serrated, silky on both sides; the lowest serratures glandular. *Stamens* hairy. *Germen* smooth, nearly sessile. *Stigmas* deeply cloven. *Scales* rounded.

Syn.—*Salix. Raii Syn.* 447; *Ger. Em.* 1389; *Matth. Valgr. v. 1.* 180.*f.*

Salix alba. Lin. Sp. Pl. 1449; *Willd. v. 4.* 710; *Eng. Bot. v. 34. t.* 2430.

THE White Willow is indigenous, very common in moist woods, and on the banks of rivers, blossoming in May. It is a tall tree with a cracked bark, and numerous widely spreading branches, which are silky when young. The leaves are alternate, on short footstalks, lanceolate, pointed, tapering towards each end, acutely and regularly serrated, silvery and grey on both sides, with close pressed silky pairs. The stipulas are sometimes wanting. The catkins are on short stalks, with three or four spreading leafy bractees, cylindrical, rather slender, obtuse, about an inch and a half long, with elliptical, lanceolate, brown, fringed scales. The filaments are hairy in their lower part, with roundish yellow anthers. The germen is nearly sessile, smooth, ovate-lanceolate, longer than the scale, with short thick cloven stigmas. The capsule is ovate, brownish, and smooth.

QUALITIES AND CHEMICAL PROPERTIES.—The bark of this, as well as of the other species, should be taken from branches about four inches in circumference. They all agree in their sensible qualities, being inodorous, but of a bitter astringent taste. The decoction of white willow bark has a dark reddish colour, and according to Bouillon La Grange, when repeated decoctions are made with the same portion of bark, the last is always deepest coloured. It is precipitated abundantly by glue, carbonate of potass, and carbonate of ammonia. Lime water throws down a precipitate at first blue, and afterwards buff-coloured. Sulphate of iron throws down a very dark green precipitate. Alcohol separates white flakes. When evaporated to dryness, a reddish brittle substance remains, which has a very bitter taste, and does not attract moisture from the air. When alcohol is digested over this bark, it acquires a greenish-yellow colour. The tincture is rendered muddy by water. When evaporated, it leaves a brilliant yellow substance of a very bitter taste, which melts at a moderate heat, and emits an aromatic odour. These experiments indicate the presence of tannin, bitter principle, extractive, and gluten in this bark.—(*Annales de Chimie*, tom. 54. p. 290.)

SALIX CAPREA.—*Great Round-leaved Willow.*

SPEC. CHAR. *Stem* erect. *Leaves* roundish-ovate, pointed, serrated, waved; and downy beneath. *Stipulas* somewhat crescent shaped. *Germen* stalked, ovate, silky. *Stigmas* nearly sessile, undivided. *Capsules* swelling.

Syn.—*Salix latifolia rotunda. Raii Syn.* 449; *Bauh. Pin.* 474.

Salix caprea. Lin. Sp. Pl. 1448; *Willd. v. 4.* 703; *Eng. Bot. v. 21. t.* 1448.

THE Great Round-leaved Willow is very common throughout Europe in rather dry woods and hedges, blossoming in April. This species grows to the size of a moderate tree, with spreading brown or purplish, minutely downy branches. The leaves are larger and broader than any other of the genus, of a deep green above, with a downy rib, and densely tomentose and veined underneath; they are generally broadly ovate, sometimes elliptical or rounded, pointed, either rounded or slightly heart-shaped at the base, varying in length from two to three inches, waved, and more or less serrated. The stipulas are heart-shaped, acute, serrated, and glaucous, assuming a crescent shape as the branch swells. The catkins are numerous, much earlier than the foliage, almost sessile; the barren ones much larger than in any other British species, *S. oleifolia* excepted, being above an inch long, thick, oval, and of a bright yellow colour. The scales are ovate, blackish, and very hairy. The stamens are longer than the scale, with oblong yellow anthers. The germen is ovate-lanceolate, on a hairy stalk, with the stigmas nearly sessile, oblong, thick, and undivided.

MEDICAL PROPERTIES AND USES.—The bark of these different species of Willow are all more or less tonic and astringent, and we assert from extensive experience of their use, that they are often capable of curing intermittent fevers uncombined with other medicines. They are, however, much more efficacious if united to carbonate of iron, or a small portion of cinchona bark. Willow bark is also administered advantageously in general debility; in dyspepsia and chronic diarrhoea; and is said to be very efficacious in the last stages of phthisis pulmonalis, and in hectic fever. It may be given in powder, in doses of half a drachm to a drachm, combined with aromatics, myrrh, &c. as may be required.



Vitis vinifera

G. Read Del

W. & A. Sc

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CXL

VITIS VINIFERA.

Grape Vine.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. HEDERACEÆ, Lin. VITIS, Juss.

GEN. CHAR. *Calyx* 5-cleft. *Petals* cohering at the apex, shrivelling, deciduous. *Berry* 5-seeded ; superior.

SPEC. CHAR. *Leaves* cordate, 5-lobed, sinuated, naked.

Syn.—*Vitis sylvestris*, *Labrusca*. *Tourn. Inst.* 613.

Ἀμπέλως ἀγρία. Diosc. lib. 5. cap. 2.

Ἀμπέλως οἰνοφόρος. Ejusd. lib. 5. cap. 1.

Κλήμα, ἢ Ἀγριάμπέλως, hodie.

Vitis vinifera. Lin. Sp. Pl. 293 ; *Willd. v.* 1. 1180 ; *Ait. Hort. Kew. v.* 2.

51 ; *Jacq. Ic. Rar. t.* 50 ; *Matth. Valgr. v.* 2. 655 ; *Camer. Epit.* 1003 ;

Ger. Em. 875 ; *Bauh. Pin.* 299 ; *Woodv. t.* 195 ; *Fl. Græc. Sibth. v.* 3.

t. 242.

THE early history of the vine is involved in considerable obscurity, for the oldest profane writers that mention it, ascribe to it a fabulous origin. According to Baron Humboldt it grows wild on the coasts of the Caspian sea, in Armenia, and Georgia ; and it is naturalized, at least, in most of the temperate regions of the globe. Dr. Sibthorp, to whose splendid work we are indebted for the accompanying plate, and his friend Mr. Hawkins, judged it to be completely wild on the banks of rivers in Greece. It is probable, that the culture of the vine was introduced from the east ; for in the sacred writings we are told, that Noah, after coming out of the ark, planted a vineyard, and “ drunk of the wine, and was drunken.” The tradition of the ancient Egyptians informs us that Osiris first paid attention to the vine, and instructed other men in planting and using it. The inhabitants of Africa ascribe the cultivation of the vine, and the art of making wine from the fermented juice of the grape, to the ancient Bacchus. Dr. Sickler, who regards this useful plant of Persian origin, has given a learned and curious account of its migration to Egypt, Greece, and Sicily.* From Sicily it is

* *Geschichte der Obst. Cult. v.* 1.

supposed to have extended to Italy, Spain, and France; and in the latter country it is believed to have been cultivated in the time of the Antonines, in the second century. The Phocéans are said to have carried it to the south of France, and the Romans planted it on the banks of the Rhine. The vine, which is found wild in America, is very different from our *Vitis vinifera*; it is, therefore, a popular error that the grape was common to both continents.* In very cold regions the vine refuses to grow, and within 25° or even 30° of the equator, it seldom flourishes so as to produce good fruit. In the northern hemisphere its culture forms a branch of rural economy from the 21° to the 51° of northern latitude, or from Schiraz in Persia to Colbentz, on the Rhine. "Some vineyards," says Mr. Loudon, "are found near Dresden and in Moravia, and by means of garden culture, it is made to produce fruit to a considerable degree of perfection in the hot-houses of St. Petersburg and Stockholm."

The grape vine has a slender, twisted, irregular stem, sending out long, trailing, flexible, leafy furrowed branches, which climb by means of tendrils to a great extent, and when young are clothed with loose shaggy down. The leaves are roundish, heart-shaped, notched, coarsely serrated, veiny; divided into five more or less distinct lobes, and are placed alternately on longish footstalks; when young they are like the branches, especially beneath; but otherwise naked and smooth. The tendrils are opposite to each footstalk; they are solitary, spiral, divided, and about the length of the leaves. The flowers, which appear in Greece in May or June, are very small, of an herbaceous colour, and fragrant like Mignonette, and are produced in clusters. The clusters are drooping, paniced, much branched, with the ultimate stalks somewhat umbellate or corymbose. Each flower consists of five, oblong, erect petals, cohering by their summits, downy at the top, and ultimately forced from their base by the stamens, which elevate them in the form of an umbrella. The calyx is very minute: the stamens are filiform, smooth, with oblong, incumbent anthers. The germen is superior, roundish, with a short style, and simple stigma. The fruit is a succulent globular berry, in the wild state not much larger than a pea, of a black colour, and containing five hard, irregular seeds. In the cultivated varieties the berry is frequently oval, oblong, or finger-shaped, and the principal colours are various shades of green, yellow, amber, and black.—Fig. (a) represents a magnified flower, the petals being removed, showing the calyx, with the germen and stamens; (b) the unexpanded flower; (c) the same, showing the petals fully expanded and cohering at the apex, before they fall, and suffer the anthers to spread and shed their pollen; (d) a small cluster of flowers.

* Humboldt, *Geographie des Plantes*, 4to. p. 26.

The Grape Vine is generally supposed to have been introduced into this country by the Romans; but from Tacitus we learn, that it was not known when Agricola commanded in the island. At the invasion of the Saxons, however, under Hengist and Horsa, A.D. 449, the vine, it is said, was extensively cultivated; and vineyards are mentioned in the earliest Saxon charters, as well as gardens and orchards. In Domesday Book, vineyards are noticed in several counties. William of Malmesbury, who flourished in the first half of the twelfth century, informs us in his book "*De Pontificibus*," that the vale of Gloucester used to produce as good wine as many of the provinces of France. From the date of the Conquest to the period of the Reformation, vineyards appear to have been attached to all the abbies and monastic institutions in the southern parts of the island. But about the time of the Reformation, when the ecclesiastical gardens were either neglected or destroyed, ale, which had been known in England for many centuries, seems to have superseded the use of wine as a general beverage. In the "*Museum Rusticum*," it is stated, that a vineyard was planted at Arundel Castle in Sussex, about the middle of the last century; and that of its produce, there are reported to have been in the Duke of Norfolk's cellars, sixty pipes of wine resembling Burgundy. Bradley informs us, that R. Warner, a gentleman of Rotherhithe, made good wine from his own vineyards; and Barry, in his "*History of Wines*," gives an account of one formed by the Hon. Charles Hamilton at Pain's Hill, in Miller's time, which succeeded for many years, and produced excellent Champagne. Although there can be no doubt, as Professor Martyn observes, that vineyards would succeed in the southern and western parts of England in proper soils, and produce wine equal to much that is imported from abroad; yet, in a national point of view, we may conclude with Mr. Loudon, that "the culture of the vine as a branch of rural economy, would not be a profitable concern here, on the broad general principle, that it cannot be worth while to grow any thing at home, which we can get cheaper from abroad."

The *varieties* of the vine are exceedingly numerous; the lists of some of our nurserymen at the present day containing more than 250 names. Of these, the most suitable for making wine in this country are, the Red Frontignac; the large black cluster, a hardy sort, the juice of which has an austere taste, and is said by Mr. Speechly to be the variety used in the manufacture of Port wine; the white Muscadine, the Malmsey Muscadine, the Miller Grape, the St. Peter's Grape, and the Auverna, or true Burgundy, sometimes called the black Morillon, which is an indifferent fruit for the table, but is esteemed the best for making wine. To the above sorts perhaps, may be added the Verdelho or Verdellio grape of Madeira, from which the celebrated wine of that island is understood to be generally made. Mr. Wilson of Pitmaston, near Worcester, has given an account of this variety, in the second volume of the *Transactions of the Horticultural Society*; and from that work we have taken our figure of the berries, which are of an amber colour when ripe, and of a very rich saccharine taste.

The age to which the Vine will attain, is supposed to equal or even

surpass that of the oak ; it spreads also to a great extent, and when supported, rises to a considerable height. Pliny speaks of a vine which had existed six hundred years ; and Bosc says, there are vines in Burgundy upwards of four hundred years of age. In Italy, they are found overtopping the tallest elm and poplar trees ; and the wood of very old ones is frequently of size enough for being sawn into planks. A vine, trained against a row of houses at Northallerton, covered, in 1785, one hundred and thirty-seven square yards, and measured four feet in circumference : it was then above one hundred years old, but is now dead. That at Hampton Court, nearly of the same age, covers above 116 square yards : it is of the red Hamburgh sort, and is a most productive bearer, having seldom fewer than 2000 clusters upon it every season. In the year 1816, there were at least 2240, averaging one pound each, so that the whole crop weighed a ton, and, merely as an article of commerce, was worth upwards of £400.

Raisins, or dried grapes, are prepared either by cutting the stalks of the bunches half through, and leaving them suspended on the vine, till they become sufficiently dry ; or by gathering the grapes when they are fully ripe, and dipping them in a ley of the burnt tendrils, to which is added a small portion of slaked lime, and afterwards exposing them to the sun to dry. In the kingdom of Grenada, particularly towards Malaga, they are simply dried in the sun, without any other preparation. About 8000 tons of raisins are annually imported into England ; and a considerable quantity of undried grapes are also imported, principally from Portugal, in jars, among saw-dust. *Currants*, of which about 6000 tons are annually imported into this country, are small dried grapes, principally grown in the Ionian islands.

The *juice of the grape* consists of water, sugar, mucilage, jelly, albumen, gluten, super-tartrate of potass, and the tartaric, citric, and malic acids. These principles left to themselves for a short time in a medium temperature, undergo remarkable changes ; their elements assume a new arrangement, and the principal compounds which are formed are *wine* and *acetic acid*.

WINE.—When the fruit is fully ripe, it is gathered for the manufacture of *wine*, and immediately subjected to the press, in order to separate the juice from the skin and seeds. In some places, however, the grapes are permitted to remain on the vines till they wither, or are gathered and dried in the sun, before they are pressed. Thus, the celebrated Tokay wine is made of dried fruit, as are many of the luscious wines of Italy. Sometimes the juice is separated by treading the grapes with the feet, in perforated tubs or baskets, placed over the vat destined to receive the must. The expressed juice, or *must* as it is called, is then put into a proper vessel or vat, and exposed to a temperature of at least 55 degrees, to enable it to commence the fermentative process. In a short time the liquor becomes turbid, an intestine motion is excited in it, its temperature increases, the skins, seeds, and other impurities rise to the surface, and a quantity of carbonic acid gas is disengaged. When the fermentation is finished, the spongy crust which forms on its surface falls to the bottom ; the liquor becomes clear,

having lost its saccharine taste and become *wine*. If we now examine the liquor, we shall find that it differs essentially in its chemical and physical properties from the juice of grapes before fermentation. Its agreeable sweet taste is changed; it has not the laxative quality of must, but affects the head and occasions intoxication: lastly, on distillation with a gentle heat, a volatile, colourless, and highly inflammable liquor called *spirit of wine*, or *alcohol*, is obtained. When the juice contains too large a proportion of sugar, it is customary to add a small portion of tartar; on the contrary, if the saccharine matter be deficient, and that salt in excess, sugar is to be added. If the juice only is fermented, white wine is produced; for when the fermentation has been conducted on the skins or *marc*, red wines are obtained, both from white and coloured grapes. Great attention and practical knowledge are required in managing the fermentation properly, as on this important process depends entirely the future qualities of the wine. The same fruit in different seasons requires to be managed differently; and almost every kind of wine requires a different, and in some cases, even an opposite mode of treatment. Thus the fine *bouquet* of Burgundy is completely dissipated by a too rapid fermentation, while, on the contrary, the fermentation of the strong wines of Languedoc, celebrated chiefly for the quantity of alcohol which they contain, should be long and complete. When the sugar is not completely decomposed, or the fermentation checked, the wine retains a sweet taste; a more perfect decomposition, with a brisker fermentation, render it strong and spirituous.

It is then put in casks, where the fermentation still continues, though in an imperceptible degree: a scum rises on its surface, and escapes by the bung-hole, which at first requires to be covered only by a leaf or tile. In proportion as the fermentation subsides, the mass of wine diminishes in bulk, and it becomes necessary to watch this cautiously, in order to supply the place with new wine, so as to keep the cask always full. In some districts, they fill up every day during the first month; every other during the second; and every eight days afterwards, till the time of racking. The effect of this insensible fermentation, is the gradual increase of the quantity of alcohol, and the separation of the tartar, which is deposited in considerable quantity in the casks, along with the colouring matter of the wine. It is of a dark red colour, very hard, and is known under the name of *argol*. When this is dissolved in water, and purified by crystallization, and reduced to powder, it forms the *cream of tartar* of commerce.

Weak wines, and those that have been too long fermented, are very apt to become sour; but the *acidity* may be corrected by the addition of sugar; or more effectually by neutralising the acid. For this purpose, the alkalies and alkaline earths, especially lime, have been employed. It was formerly the practice to use the acetate of lead to destroy the acidity in weak wines, but this murderous practice has long since been laid aside. *Ropiness* may be got rid of by exposing the bottles to the sun and air, by adding a small quantity of vegetable acid, and by fining. The *mustiness* and other

ill flavour communicated by the casks or cork, may sometimes be removed by agitating the wine in contact with the air, or by the introduction of common carbonic acid gas, by pumping.

The odour and flavour of wines depend altogether on climate, soil, and the mode of conducting the fermentation: the same climate, soil, and mode of culture, often produce wines of very different qualities. Position and aspect alone, all other circumstances being the same, make a prodigious difference. The Vine grows in every soil, but that which is light and gravelly, is best adapted for its cultivation. It flourishes extremely well in volcanic countries; thus some of the best wines of Italy are made in the neighbourhood of Vesuvius. The famous Tokay wine is also made in a volcanic district, as are several of the best French wines. The Vine also flourishes well in primitive countries, and especially among the debris of granite rocks; thus the celebrated Hermitage wine is made from a soil of this description.

The quality and flavour of the more fully fermented wines depends principally on the mode of conducting the process of fermentation; but the sweet and half-fermented wines, derive their taste immediately from the fruit. "Malaga, Frontignac, Tokay, Vino Tinto, Montifuscone, Schiras, and the Malmsey wines of the Greek islands, are sweet to the taste, and consequently the result of imperfect fermentation; Champagne, Gooseberry, and all sparkling wines, owe their briskness to carbonic acid gas; Hock, Rhenish, Mayne, Barsac, Burgundy, Claret, and Hermitage, contain a certain quantity of uncombined acid, and are termed light and dry; while Marsala, Madeira, Sherry and Port, are dry and strong. The odour of *Sherry* is pleasant and aromatic; the taste warm, with some degree of the agreeable bitterness of the peach kernel; the taste of *Port* is austere and bitterish; *Claret* is less rough, thinner, slightly acidulous, and highly flavoured; and *Hock* acidulous. Of the common white wines, Marsala is undoubtedly the strongest." The roughness and flavour of red wines are generally derived from the husks of the fruit, and when it is wished to impart these qualities in a higher degree, various astringent and chemical preparations are used, such as catechu, kino, logwood, rhatany root, the juice of sloes, elder berries, &c. A yellow tint is given to many wines by means of burnt sugar: raspberries, oris root, fir-tops, and a variety of other ingredients are employed for the purpose of communicating their respective flavours. In Madeira wines as well as those of Xeres and San Lucar, it is the practice to use sweet and bitter almonds; hence the *nutty* flavour of many of these wines. Notwithstanding these differences in the qualities of wines, the essential principles found in all of them are the following: one or more acids, viz. the *tartaric*, the *malic*, the *citric*, the *carbonic*, and in some instances the *acetic*; extractive matter, which in old wines is deposited with the tartar, and constitutes part of what is called the crust; a *volatile oil*, on which the flavour depends; *colouring* matter; and *alcohol*. The following is Mr. Brande's valuable table representing the average quantity by measure of alcohol, sp. gr. 0.825, contained in different kinds of wine:

Proportion of spirit per cent. by measure.

| | | |
|----|---------------------------|-------|
| 1 | Lissa, average..... | 25.41 |
| 2 | Port, ditto..... | 22.18 |
| 3 | Raisin wine, ditto..... | 25.12 |
| 4 | Marsala, ditto..... | 25.9 |
| 5 | Madeira, ditto..... | 22.27 |
| 6 | Currant wine..... | 20.55 |
| 7 | Sherry, average..... | 19.17 |
| 8 | Teneriffe..... | 19.79 |
| 9 | Colares..... | 19.75 |
| 10 | Lachryma Christi..... | 19.70 |
| 11 | White Constantia..... | 19.75 |
| 12 | Red Constantia..... | 18.92 |
| 13 | Lisbon..... | 18.94 |
| 14 | Malaga (1666)..... | 18.94 |
| 15 | Bucellas..... | 18.49 |
| 16 | Red Madeira, average.... | 20.35 |
| 17 | Cape Muschat..... | 18.25 |
| 18 | Cape Madeira, average.... | 20.51 |
| 19 | Grape wine..... | 18.11 |
| 20 | Calcavella, average..... | 18.65 |
| 21 | Vidonia..... | 19.25 |
| 22 | Alba Flora..... | 17.26 |
| 23 | Malaga..... | 17.26 |
| 24 | White Hermitage..... | 17.43 |
| 25 | Rousillon, average..... | 18.13 |
| 26 | Claret, average..... | 15.10 |
| 27 | Malmsey Madeira..... | 16.40 |

Proportion of spirit per cent. by measure.

| | | |
|----|---|-------|
| 28 | Lunel..... | 15.52 |
| 29 | Sheraz..... | 15.52 |
| 30 | Syracuse..... | 15.28 |
| 31 | Sauterne..... | 14.22 |
| 32 | Burgundy, average..... | 14.57 |
| 33 | Hock, ditto..... | 13.68 |
| 34 | Hock (old in cask)..... | 8.88 |
| 35 | Nice..... | 14.63 |
| 36 | Barsac..... | 13.86 |
| 37 | Tent..... | 13.30 |
| 38 | Champagne, white..... | 13.30 |
| 39 | Champagne, red..... | 11.93 |
| 40 | Red Hermitage..... | 12.32 |
| 41 | Vin de Grave, average.... | 13.37 |
| 42 | Frontignac..... | 12.79 |
| 43 | Côte Rotie..... | 12.32 |
| 44 | Gooseberry wine..... | 11.84 |
| 45 | Tokay..... | 9.88 |
| 46 | Elder wine..... | 9.87 |
| 47 | Orange wine, average of six
samples, made by a Lon-
don manufacturer..... | 11.26 |
| 48 | Cider, highest average.... | 9.87 |
| | Ditto, lowest average..... | 5.21 |
| 49 | Perry, average of four sam-
ples..... | 7.26 |
| 50 | Mead..... | 7.32 |

Of the wines drank in Europe, the following are the most esteemed: in the island of Madeira, which has long been celebrated for its wine, and Palma, one of the Canaries, there are two kinds of wine; the first called *Madeira per se*, or Canary wine, and *Palm sec*, or Palm wine. The name *sec*, (corruptly written *Sack*,) signifies dry; these wines being made from half-dried grapes. Upwards of forty thousand pipes of Madeira wine are annually exported, one half of which goes to the British settlements in the East and West Indies. The wines of Candia and Greece are of common use in Italy. *Malmsey* was formerly the produce of those parts only; but is now chiefly brought from Spain; it is a sweet wine, of a golden, or brownish-yellow colour, and to this is applied the Italian proverb, "Manna to the mouth and balsam to the brain." Almost all the wines used in the Venetian territories comes from Greece and the Morea. Italy produces the *Vino Greco*, which is a gold coloured unctuous wine, and is the growth of Mount Vesuvius. In the same neighbourhood is made the *Mangiaguerra* wine, a thick blackish one called *Verracia*, and at the foot of the hill the delicious *Vino vergine*. The kingdom of Naples affords the *Campania* or *Pausillipo*, *Muscatel*, *Salernitan*, and other excellent wines, and also the *Chiarello*, much drank at Rome. But the principal is the red, unctuous, and poignant wine called *Lachryma Christi*. The ecclesiastical state produces the bright pleasant *Albano* and the sweet *Montefiascone*. In Tuscany are the excellent white and red Florence; the celebrated hot, strong, red wine, *de Monte Puciano*, &c. In Lombardy, the Modenese and Montserrat are tolerable; between Nizza and Savona is produced an incomparable *Muscadine*. Piedmont and part of Savoy have

excellent light wines. The Sicilian and Sardinian wines are also good. Some of the wines of Spain are excellent; the greatest quantities are made in the southern part of the kingdom. The wines of the Canaries are to be met with in most of the ports of Spain, and are usually classed with the wines of that country. Although the whole of the Canaries produce excellent wines, the preference is given to those of Parma and Teneriffe. When the vintage proves favourable, Teneriffe annually produces about 30,000 pipes of *Vidonia*, or as it is sometimes denominated *bastard Madeira*, from the similarity of its flavour and appearance to the dry wine of that island. Teneriffe also produces a sweet wine, which is nearly similar to Malmsey Madeira. The wine of Guidas in Castile, is made from cherries, and is a species of *ratafia*. The Foucal wine, which takes its name from a village near Madrid; and the wines of *Val de Penas*, *Cuidad Real*, *Ribadania*, *Rioxa*, and those called *La Mancha*, are said to be very good. The best wine of Arragon is a red wine named *Hospital*, and *Caninea*, called likewise white Garnachas, is very fine, and much esteemed. The wines of Peralta, well known under the name of *Rancio*, and those of Tudela, Tafalla and Arandillo in Navarre, are excellent, both as to flavour and quality. The wines of Xeres, better known under the name of Sherry, are made at a town of that name in the province of Andalusia. The flavour of leather which is sometimes perceived in tasting Sherry, is said to be owing to the custom of bringing the wines down the country in large leathern vessels; or as the Spaniards call them, boots, whence we derive our term butts, which we bestow upon the casks in which we receive the wine. In Andalusia, are made sweet and dry wines, called *Pagarete* and *San Lucar*; and the strong well-known red wine, denominated *Tinto Rota*, or *Tent*; which is an excellent stomachic. The *Montillo* is a dry wine. The territory of Xeres alone, annually produces about 60,000 pipes of wine. In the province of Granada is made the celebrated wine called *Mountain* or *Malaga*; it is dry and sweet, both red and white. Granada also produces *Peroximenes* or *Pedro Ximenes*, which is a very fine-flavoured wine, and a kind of Malmsey which is exquisite. In Valencia, is found the *Tinto Alicante*, a wine much used in France and Germany; and the *Benicarlo*, an inferior sort of red, dry, and thick wine, which is often palmed upon the public by wine dealers as Port wine. The wine called *Siches*, and that called *Garnache*, both made in Catalonia, are exquisite. In the same provinces are made *Tinto de las Montanas*, or *Mountain Tent*, and *Mataro* wine; both of which are sweet, thick, ropy, and unwholesome. It is almost needless to observe, that the wine called *Port*, of which such vast quantities are consumed in Great Britain, is the production of Portugal. The vines, whence it is made, grow upon the banks of the Douro, and occupy a space about six leagues in length, and two leagues in breadth. These vineyards produce between 60 and 70,000 pipes of Port, and there are others which yield nearly 6000 pipes annually. In France there are a great variety of wines, of which the strong, sweet, full-bodied spirituous ones, are called *vins de liqueur*. Languedoc and Provence afford the sweetest wines, and the same provinces, with Champagne and Burgundy, the strongest. In the province of Champagne there

are two kinds of wine, the white wines called *Riviere de Marne* wines, and the red wines called *Montagne de Rheims* wines. The most celebrated of the French wines are *Champagne*, *Burgundy*, *Hermitage*, *Vin de baume*; the *Muscat* wines, *Frontignac*, *Lafitte*, &c. The *Vin de Laugon*, so called from a small town, near which it is made, is reckoned the best of all the wines of the Bordelais, which are included under the general name of *Vins de Grave*, from the sandy and gravelly soil in which the vines grow. A great deal of the wines made in the Bordelais, are sold under the name of *Macon*. *Auvernat*, commonly called *Casse Taille*, is made at Orleans, and is a full good wine. Another Orleans wine is *Genetin*. *Hermitage* is the produce of a vine which is grown upon the banks of the Rhone, between Valance and St. Valiere. Near this also the *Côte rotie* is made, which takes its name from the hill on which the vines grow. In Switzerland, the best wines are the *Neufchatel*, *Valteline*, *Lacote*, and *Reiff*. The dry grape-wines of Upper Hungary, especially the Tokay, are in general excellent. Among the German wines, those of Tyrol are very delicate, but do not keep. Of Austrian wines, those of *Kloster*, *Newburgh* and *Rosenburgh*, are deemed the best. In the Palatinate, the best wine is that of *Worms*. Among the most esteemed wines may be reckoned also *Rhenish*, *Mayne*, *Moselle*, *Neckar* and *Elsas*. The Rhenish wine made in Hockheim (Hock,) is regarded as the prince of German wines.

MEDICAL PROPERTIES AND USES.—The ripe fruit of the Vine is wholesome, antiseptic, and cooling, and when eaten freely, diuretic and gently laxative; grapes obviate and correct the stimulant and septic effects of animal food, open the body, and cool and refresh the system. Hence they have been found eminently useful in bilious and putrid fevers, dysentery, scorbutic affections, and in all acute, febrile, and inflammatory diseases. Grapes when used raw, or conserved, afford a considerable quantity of bland nutritious aliment, and hence they have been highly extolled as an article of diet in pulmonary consumption. Raisins (*Uva passæ*,) and currants (*Uvæ passæ minores*,) contain a large proportion of saccharine matter, and are highly nutritious and demulcent. They are more laxative than the fresh fruit; but when too freely indulged in, are apt to produce flatulence and cholic. Raisins are used in pharmacy to impart an agreeable sweet, and on this account, enter as an ingredient into some officinal preparations, as the *Decoctum Hordei compositum*, L.D. the *Tinctura Cardamomi Composita*, L. D., and *Tinctura Sennæ*, L.

Wine is cordial, stimulant, antiseptic and tonic. In moderate quantities, it stimulates and excites the energies of the system, promotes digestion, increases the action of the heart and arteries, exhilarates the spirits, enlivens the senses, awakens the passions, and calls into action all the intellectual powers. Taken in excess it intoxicates, produces nausea, sickness, head-ache, vertigo, diarrhœa, nervous tremors, and other symptoms, which continue for two or three days. Like ardent spirit, its habitual and long continued use is equally destructive to the body and mind, producing dyspepsia, hypochondriasis, visceral obstructions, hepatic and pulmonary inflammation, gout, apoplexy, palsy, dropsy, madness, and a long and frightful catalogue of diseases.

“ The action of wine on the system,” says Dr. Murray,* “ though analogous to that of alcohol, is not precisely alike ; its stimulant operation appears to be less sudden and more durable ; and hence it can be employed with more advantage as a tonic. It is as a tonic indeed, rather than as a narcotic, that wine is administered. Its chief medicinal application is in the treatment of fevers of the typhoid type, to support the strength of the system, and to obviate symptoms arising from debility. With these views, it is given with more advantage than any other tonic,—a superiority derived from its stimulating power being obtained with more certainty, and being more easily regulated, from its being more grateful, and probably not requiring to be assimilated by the digestive organs to produce its effects. The quantity in which it is given is dependent on the state of disease ; the object to be attained is that of supporting the strength of the system until the disease has run its course ; the danger to be avoided is that of giving it so largely, as to occasion any degree of exhaustion. Its administration is regulated, therefore, by the effects it produces ; advantage being always derived from it, when it renders the pulse more slow and firm ; when the recurrence of delirium is prevented ; when irritation is lessened, and sleep induced. If the pulse is quickened, and the countenance becomes flushed ; if it excite thirst, increase the heat of the body, and occasion restlessness or delirium, it is obviously injurious ; and the dose must either be diminished, or its use altogether suspended. In general its operation is less powerful than it is on the system in a state of health ; larger quantities therefore can be taken, and are even required, to produce an exciting effect.

“ In various diseases of chronic weakness, or where the strength of the system has been reduced by profuse evacuations, or by any other debilitating operation, wine is in common use as a cordial and tonic.

“ Different wines have effects somewhat different, according as they are possessed of astringency, or as they are sweet or acescent ; and are hence adapted to answer different indications.”

As Wine is found to be capable, by infusion, of extracting many vegetable principles ; it is sometimes used in Pharmacy. From the alcohol it contains, it dissolves a certain portion of their resin, extract, and essential oil ; its watery part dissolves their gum or mucilage ; but medicated wines are more liable to spontaneous decomposition than tinctures ; hence the London College has rejected them from the last edition of their Pharmacopœia.

OFF. PREP.—Vini medicati, *E. D.*

* *System of Materia Medica*, v. i. p. 133.

